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White collar criminality: A prediction model

by

Judith M. Collins

An Abstract of

A Dissertation Submitted to the

Graduate Faculty in Partial Fulfillment of the

Requirements for the Degree of

DOCTOR OF PHILOSOPHY

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Iowa State University
Ames, Iowa

1991

White collar criminality: A prediction model

Judith M. Collins

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A prediction model for the purpose of maximally differentiating potential white collar offenders from non-offenders was developed and validated.

The problems today in the selection of personnel for white collar positions are three-fold: the costs of white collar crime are on the increase, the applicant pool for white collar positions is on the decrease, and potential job incumbents often have little or no credit history or past work records from which assessments of risk are typically made.

An essential personnel selection function, therefore, for the hiring of job applicants into sensitive white collar positions is the identification of individuals who may be prone to engage in financially irresponsible acts.

Responses to five self-report instruments by 365 incarcerated white collar offenders and 344 white collar employees holding positions of authority addressed the relationships between three factors: behavioral tendencies

of the individuals, their perceptions of personal and work-related situations, and behaviors in past situations.

Forty-nine scales were reduced to 15 scales to form a discrimination function for purposes of classification. The function correctly classified 89.35% of the nonoffenders, and 90.41% of the offenders. Further analyses, based upon the results of the 15 scale discriminant analysis, identified a six factor discriminant model which correctly classified 87.96% of the non - offenders and 85.84% of the offenders. Cross-validation using a hold-out sample provided evidence for the stability of the weights in the above analyses as well as for an analysis using only male subjects. Base rate issues were addressed. For all of the models, the same two global constructs were identified under which were subsumed the 15 scales (or dimensions) and six scales (or dimensions) of the discriminant functions: extra-curricular activity and social conscientiousness.

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Major: Psychology

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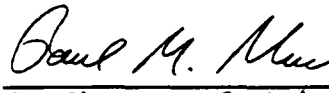

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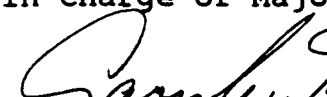

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INTRODUCTION

Objective

A two-tiered study was proposed to identify individuals who may have the propensity to engage in white collar offenses -- non-violent offenses that are committed for personal financial gain by means of deception. The goal is to reduce the proportion of security clearances, sensitive assignments, or promotions to positions of confidentiality granted to individuals who are prone to engage in financially irresponsible acts.

In Study One, a theoretical approach was taken in which hypotheses were be specified; the principles of adaptation-level phenomena, frustration-aggression theory, and Vroom's (1964) Expectancy Model were applied to the exploration of white collar criminality.

An empirical approach was taken in Study Two in the development and validation of a prediction model for the purpose of maximally differentiating potential white-collar offenders from non-offenders. In Study Two, three interrelated factors were considered in the prediction of behavior: 1) the identification of individuals who are described and evaluated in particular and interpersonally significant ways (as distinguished from

the ordinary psychometric aim of defining an individual's psychological traits), 2) the individual's behavior in past situations, and 3) the individual's perception of the work-related environment. Self-report data from the study population samples were used to evaluate these three predictors of behavior.

The Definition of White Collar Crime

It is necessary to define white collar crime in order to distinguish between white collar offenders and non-offenders. Clinard and Quinney (1973) describe white collar crime as occupational crime consisting of offenses committed by individuals for themselves in the course of their occupations, and the offenses of employees against their employers. Other researchers have defined white collar crime as violations of law to which penalties are attached that involve the use of a violator's position of influence, trust, or power in the legitimate economic or political institutional order for the purpose of illegal gain, or to commit an illegal act for personal or organizational gain (Reiss & Biderman, 1980). Edelhertz (1970) states that white collar crime is "an illegal act or series of illegal acts committed by non-physical means and by concealment or guile, to obtain money or property, to avoid the payment or loss of money or property, or to

obtain business or personal advantage" (p. 3). The Attorney General's First Annual Report on Federal Law Enforcement and Criminal Justice System Assistance Activities (1972) described Edelhertz's (1970) definition of white collar crime as "a good working definition" (p. 161).

Sutherland (1949), who coined the term "white collar crime", defined it as "...a crime committed by a person of respectability and high social status in the course of his occupation" (p. 9).

Finally, the definition provided by the Dictionary of Criminal Justice Data Terminology, Bureau of Justice Statistics (1981), and the definition used in this study, describes white collar crime as "non-violent crime for financial gain committed by means of deception by persons whose occupational status is entrepreneurial, professional or semi-professional and utilizing their special occupational skills and opportunities; also, nonviolent crime for financial gain utilizing deception and committed by anyone having special technical and professional knowledge of business and government, irrespective of the person's occupation." The Dictionary adds that "in current criminal justice usage of the term, the focus of the meaning has shifted to the nature of the crime instead of

the persons or occupations." In the present study, individuals were categorized according to white collar offending vs. non-offending status, and not according to occupational status. The term "white collar" refers to the characteristics of the occupational position (e.g., position power). Typically, this includes upper level occupational crime, but implicit in the above definition are crimes where blue collar workers hold positions of power, influence and trust (e.g., managers or supervisors). In the present study, however, all participants held white collar positions. The definition excludes corporate crime and organizational crime (offenses committed by an organization rather than an individual), as well as credit card frauds and welfare cheats.

A distinction is drawn between the event (the crime) and the characteristics of individuals (criminality). The focus of the present study will be on the individual: the characteristics of the individual, the individual's behavior in past situations, and the individual's perceptions of work-related situations.

It is important to point out that the intent of the present study was not to compare low-socioeconomic status offenders with high-socioeconomic status offenders. While social status is implicit in the term "white collar

criminality," the intended goal was, rather, to identify differences in groups of individuals who may be considered homogeneous but for a particular behavioral response -- commission of crimes for financial purposes. The attention is, therefore, driven to focus on differential descriptions of the individual (personality, biographical data, attitudes toward the work environment) while simultaneously recognizing the contribution of the occupational role (e.g., power of the position) for the opportunity (for commission of the crime).

The Problem

Industry and government recruit job applicants who often have little or no credit history or past work record (e.g., recent college graduates) with the intention of developing an experienced and secure work force. Due to today's demographic changes in the number of available new recruits and job applicants, organizations no longer have the luxury of small selection ratios. The average age of the population and the workforce is increasing, and the pool of workers entering the labor market is shrinking (U. S. Department of Labor, 1988). Today, organizations that are seeking applicants are also actively searching for incentives to attract the fewer numbers that are available to meet the labor demand. The fast moving pace of

technological advances and the urgency with which organizations seek the competitive edge further compound the recruitment and selection process. Positions that need to be filled often hold access to confidential and sensitive information, requiring authorized clearances for purposes of confidentiality and organizational security. While some authors suggest that current changes in the demographic composition lead to the prediction of decreasing crime rates (Wilkie, 1990), Hagan (1986) noted that criminologists and others do not agree in these forecasts. For example, with respect to corporate crime, the quantity, cost, and international scope of such criminality are likely to increase with the growth of multinational businesses (Hagan, 1986), and Sykes (1972, 1980 as cited in Hagan, 1986) predicted that urban poverty associated with criminality is likely to continue and will continue to play a major role in street crimes. Today, high incidents of white collar crime, with escalating costs, are occurring. Although estimates of the costs of white collar crime are hazardous due to the difficulty in the measurement of these offenses, an early 1980's estimate placed the figure at $50 billion upwards (Hagan, 1986). Sullivan and Victor (1988) have pointed out that most white collar crime goes undetected and, therefore, the exact

amount of costs are unknown. They estimate the figures to vary from $40 billion to over $200 billion per year.

The problems today in the selection of personnel for white collar positions are, therefore, twofold: the applicant pool for white collar positions is on the decrease, and the costs of white collar crime are on the increase. An essential personnel selection function, therefore, for the hiring of job applicants into white collar positions of security, is the identification of individuals who may be prone to engage in financially irresponsible acts.

Theories of White Collar Crime

Since Edwin Sutherland's 1939 presidential address to the American Sociological Society and the publication of his monograph a decade later, white collar crime has been investigated from sociological, economic, legal, biological, and psychological perspectives. Within each of these perspectives, many frameworks have been employed in an attempt to understand white collar crimes. Given the large volume of literature on theories of crime and criminality, the present review will be narrowed to include the most historical and well known, as well as the most recent, sociological theories; Yochelson and Samenow's (1977) theory of the criminal personality;

Cortes and Gatti's (1972) biopsychosocial approach; and three newly published perspectives -- a latent trait model, Wilson and Herrnstein's (1985) comprehensive theory, and Fishbein's biological theory.

Sociological Perspectives. Crime research has been dominated by the sociological perspective with an emphasis on the outcome of the offense, and the environment in which the offense occurs. Several theoretical approaches to the understanding of crime have been advanced in which the units of analyses are societal conditions, groups, social disorganization, and conflict; sociological criminology takes a critical stance toward the society itself as generator of criminal conduct (Hagan, 1986).

Sutherland's Differential Association. The most well known and historical sociological explanation of white collar crime is Sutherland's (1940) "differential association" theory. Edwin H. Sutherland's December 27, 1939 address to the American Sociological Society was entitled "The white collar criminal" (Sutherland, 1940). It focused attention on enormous incidents of lawbreaking by people in positions of authority and power, altering the study of crime throughout the world (Sutherland, 1983). Sutherland (1983) explained his theory of white collar crime through a hypothesis he called differential

association:

> The hypothesis of differential association is that criminal behavior is learned in association with those who define such criminal behavior favorably and in isolation from those who define it unfavorably, and that a person in an appropriate situation engages in such criminal behavior if, and only if, the weight of the favorable definitions exceeds the weight of the unfavorable definitions (p. 240).

Differential Association was considered a *general* theory of crime, as Sutherland (1983) stated, "This hypothesis is certainly not a complete or universal explanation of white collar crime or of other crime, but it perhaps fits the data of both types of crimes better than any other hypothesis" (p. 240). Sutherland was referring to violent as well as white collar crimes and, simply stated, his theory is a learning theory through which human behavior can be understood in terms of conditioned responses, reinforcement, and modelling. It is a theory in which criminal behavior is linked to associations with social influences. While this theory emphasizes criminality as a *social process*, other sociological theories have explained

behavior through *social control* mechanisms.

The failure of the theory to explain the origin of crime and the difficulty in proving or disproving the theory are two criticisms of differential association. Nonetheless, it remains one of the most cited theories of criminality and continues to be useful as a general theory of criminality (Hagan, 1986).

Reckless's Containment Theory. Reckless's (1961) containment theory is a well known example of a social control theory that emphasizes an interaction between individual and environment. In this theory, lack of legitimate opportunity, social forces, or *external pressure* (such as minority group membership, poor economic conditions) and personality characteristics, or *internal pressures* (such as attitudes of inferiority or emotional stress) drive an individual toward criminality.

According to Reckless (1961), social forces that contribute to criminality include deviant subcultures, peer groups and any other such negative social influences. That not all individuals who experience *external* and *internal pressures* engage in crime is explained by *inner* and *outer* containments. *Inner* containments are values and personality characteristics held by the non-offender that serve as deterents to acts of criminality. *Outer*

containments are the social groups of the non-offender, such as family and friends. Implicit in this theory is an assumption that poverty may be a cause of criminal behavior. In 1967, however, Reckless proposed a bimodal theory in which the criminality distribution curve has two modes -- the most frequent cases of crime commission occur among the lower as well as the upper class (Reckless & Dinitz, 1967).

It is disappointing that more research has not been conducted in further exploration of containment theory. Reckless (1961) has integrated situational and personal variables into a framework from which behavior can be explained. According to Mischel's (1973, 1984a) cognitive social learning theory, five "person variables" are important in understanding how the individual interacts with the environment: competence, how situations are perceived, expectancies of outcomes, personal standards, and values. Reckless's containment theory addresses these issues. Critics of containment theory agree that, although Reckless's (1961) model is a useful descriptive model that attempts to explain environmental as well as individual forces toward crime, more research is needed to verify the theory (Hagan, 1986).

Hirschi and Gottfredson's General Theory. Hirschi and

Gottfredson (1987) have developed a general theory of crime in which causal distinctions are not drawn between white collar and other types of offenders. The assumption underlying this theory is that there is no correspondence between particular crimes and particular individuals: a murderer may embezzle, and an embezzler may murder. Hirschi and Gottfredson's theory was developed as a result of their studies on age and crime in which they found that criminal acts vary in frequency over age (with a curvilinear relationship between age and crimes), but that differences in *propensities* to commit criminal acts remained stable over the same period of time. This led to their distinction between crime (the act) and criminality (the characteristic tendency of the individual), where *crime* changes with age but *criminality* remains the same over a certain time span. The importance of this distinction is that theories of crime should tell us the conditions under which criminal propensities are likely or unlikely to lead to criminal acts, and theories of criminality should tell us why some people are more prone to commit criminal acts than are other people (Hirschi & Gottfredson, 1988). Hirschi and Gottfredson's theory posit that one propensity is sufficient to account for variance across crimes; that is, all criminal behaviors are

manifestations of the same underlying propensity.

The general theory is not intended to integrate the various perspectives of white collar crimes (e.g., sociological emphasis on criminal events and the external environment, psychological emphasis on individual differences, etc.) but is, rather, intended to be capable of encompassing all perspectives for the purpose of identifying common features of criminality. It has been noted by Hirschi and Gottfredson (1988) that, while crime research has been dominated by the sociological perspective for the last sixty years, this tradition has led to the relative neglect of the potential contributions of other disciplines to the understanding of crime.

Psychological Perspectives. While sociologists have focused on environmental factors, psychological theories have emphasized the study of individual differences in understanding behavior. Freud's (1939/1963) concepts and theories of personality, Skinner's (1953) principles of behaving, and Bandura's (1977) social learning theory have all been applied to explanations of criminal behavior. A major portion of the psychological literature addresses personality differences between criminals and non-criminals; here the emphasis is on the human traits or tendencies that may predispose individuals to criminality,

and the focus is on the individual's reaction to the environment. Healy (1915) wrote:

> The makeup of the personality is the largest part of the story....Poverty, and crowded houses and so on by themselves alone are not productive of criminalism... A public playground is no incentive toward good conduct unless better mental activities and mental conduct are fostered there... All problems connected with bad environmental conditions should be carefully viewed in the light of mental life (p. 284).

Yochelson and Samenow's (1977) investigation focused on such criminal personality.

The Criminal Personality. The most comprehensive studies of the criminal personality were conducted over a fifteen year period by Yochelson and Samenow (1977). The purpose of their research was not to derive causation but, rather, to differentially diagnose for purposes of prediction. They have pointed out that society is interested in two types of prediction that are related to the crime problem: predicting who will be a criminal, and predicting which criminals will continue to be criminals. Yochelson and Samenow (1977) were interested in producing

behavioral change in the criminal and, in doing so, believed they must deal with the inner person, not with the person's environment.

Yochelson and Samenow's (1977) model of the "criminal personality" is a holistic one in that, like Hirschi and Gottfredson's general theory, it tries to explain a common construct underlying all types of criminality. Hagan (1986) states, "Rather than restricting its focus to specific types of offenders, the search for the 'criminal personality' of which Yochelson and Samenow's theory is the most recent example is too globally ambitious in trying to explain all types of criminals" (p. 421). Since Hagan (1986), however, yet another model proposing underlying common dimensions has been proposed (Rowe, Osgood & Nicewander, 1990).

The Latent Trait Approach. The assumptions of the latent trait model are that propensity to commit a criminal act is normally distributed among the population, that the underlying disposition is a continuous dimension along which individuals vary, and that an individual's position on this dimension is somewhat stable over time (Rowe, Osgood, & Nicewander, 1990). The model is contrasted with the "criminal career" model (Blumstein & Cohen, 1987; Blumstein, Cohen, Roth, & Visher, 1986; Blumstein, Cohen &

Farrington, 1988) in which offenders and non-offenders are categorized as separate and distinct groups. In the latent trait model, the importance of personality as the basis for criminal behavior is not a claim. The importance lies in the distinctions (between individuals) that are made throughout a continuum of proneness toward crime.

Support for the latent trait model comes from studies that have shown a lack of specialization in offending (Wolfgang, Figlio, & Sellin, 1972; Wolfgang, Thornberry, & Figlio, 1987; Robins & Ratcliff, 1980). The findings of these researchers indicate that individuals who engage in illegal behavior typically engage in a variety of crimes, and underlying these behaviors is a generalized trait. The stability of individual differences in offending is pointed out as additional support for the latent trait model (Rowe et al., 1990). The authors contend that, while change in behavior occurs over time, an individual's first offense is but a manifestation of the latent trait. Finally, evidence of genetic influences of criminal behavior are cited as further evidence of an underlying dimension.

Rowe et al.'s (1990) approach is not intended to, and does not, specify a particular latent trait. Rather, it provides a conceptual model for understanding criminal behavior.

While psychological theories are valuable for their focus on mechanisms that are linked to criminal behavior, a criticism of psychological theories has been in their failure to consider important sociological variables. Conversely, sociological theories cannot explain differences between people from the same environment. The question as to why two individuals holding the same personality tendencies choose different behaviors cannot be answered by psychological theories of individual differences alone. At issue is the identification of patterns of personality factors that operate in conjunction with environmental factors - such as life history experiences along with the individual's perception of the situation. Cortes and Gatti's (1972) biopsychosocial theory is one approach that addresses these multiple factors.

Biopsychosocial Theory. The emphases in Cortes and Gatti's (1972) biopsychosocial theory are environmental and personality factors, and the imbalance and interaction between them. According to this theory, criminal and delinquent behavior are the result of a negative imbalance, within the individual, in the interaction between (a) the expressive forces of biological and psychological impulses, and (b) the normative forces of familial, religious, and

socioculture factors (Cortes & Gatti, 1972, p. 351). The biopsychosocial theory explains criminal behavior through the role of the environment. According to the theory, the environment contaminates the individual by promoting the internalization of criminalistic patterns, or by failing to promote internalization of norms and controls.

The idea that multifactor approaches are necessary in the understanding of criminal behavior is not new (see, for example, Healy, 1915, and Glueck & Glueck, 1950). Critics of multifactor approaches, however, point out the importance of distinguishing between causation and correlation of the multiple factors associated with criminal behavior (Hagan, 1986, p. 424).

Another multifactor theory that recently has been proposed is based on learning theory (Wilson & Herrnstein, 1985).

Wilson and Herrnstein's Comprehensive Theory. Wilson and Herrnstein (1985) have advanced a multi-faceted, or comprehensive, theory that is based upon behavioral psychology. In explaining criminal behavior, these researchers emphasize reinforcers, conditioning, delay and uncertainty in risk and in punishment, equity and inequity of available resources, and personality factors.

According to the theory, primary and secondary

reinforcers contribute to criminal behavior: primary reinforcers satisfy innate drives (sex, hunger, aggressiveness) while secondary reinforcers (rewards or punishments) are learned. Wilson and Herrnstein point out the importance of drawing a distinction between the two types of reinforcement. While the two are associated in effecting behavior, the secondary (learned) reinforcement changes in strength along with the innately driven primary reinforcers. They provide the example of money, a powerful reward that is strongly associated with the primary rewards that satisfy innate drives. The authors of the theory have stated that "Because of the constant and universal reinforcing power of money, people are inclined to think of crimes for money gain as more natural, and thus more the product of voluntary choice and rational thought, than crimes involving "senseless" violence or sexual deviance" (p. 46). Wilson and Herrnstein go on to argue that the association between primary and secondary reinforcers is conditional. That is, the strength and frequency of the reward or punishment affects future behavior. At the same time, the delay and uncertainty of such rewards or punishments (i.e., now or later) will also influence behavior. Thus, the immediate reward of money for a crime that is perceived as likely to go undetected will, for some

people, influence criminal behavior. Such behavior may be justified, according to the theory, if the individual perceives that inequities exist. That is, standards of comparisons with others are made to determine if one's fair share is being met. Further, personality also contributes to individual differences in criminal behavior, and Wilson and Herrnstein (1985) cite numerous supporting studies.

Finally, the authors have derived a mathematical equation that incorporates all of the above variables in predicting the likelihood that a crime will occur.

A newly proposed biological model (for predicting criminality) is also based on learning theory (Fishbein, 1990).

Fishbein's Biological Model. In Fishbein's (1990) biological model, learning and the neurological structure of the brain are the underlying dimensions of criminal behavior. Inherent in the biological makeup of humans is the innate capacity to learn. Neural and biochemical changes in the brain structure occur when an individual is exposed to internal (biological) or external (environmental) stimuli. In this model, tendencies toward antisocial behavior may be innate and made manifest under certain conditions. The learning process will occur differentially, depending on the neurological makeup of the

individual, and the types of rewards or modelling to which the individual is exposed. Fishbein (1990) described criminal behavior as "developmental," and occurring over time as an individual's coping mechanisms are reinforced (p. 42).

Fishbein's (1990) new approach, and the others presented here, are indicative of the issues being raised and the vast number of theoretical approaches that are proposed for empirical study. However, there is no consensus on any formal theory of white collar criminality. The theoretical approach taken in Study One, and the empirical analysis of Study Two represent the intent to extend the understanding of white collar criminality from the psychological perspective.

METHOD

Subjects

Instruments were administered by this researcher, personally, to two contrasted population samples over a nine month period, beginning in September, 1990 and ending in May, 1991. Overall, a total of 709 subjects participated in the study. Table 1 presents a list of the U. S. Federal Prisons, the number of inmates at each institution who participated in the study, and the dates that the test instruments were administered to the inmates.

Sample one consisted of 365 federal prison inmates. Of the 365 inmates, observations for 15 inmates were deleted from the overall set of data because the inmates' credit card fraud offenses did not match the description for white collar crime, observations for one individual were eliminated due to obvious random guessing, and three observation sets were not included because one or more instruments had not been completed. The remaining sample consisted of 272 males and 74 females who were convicted in U.S. Federal Courts of white collar crimes. The 346 inmates were of the following ethnic backgrounds: 258 White; 43 Black; 10 Hispanic; 2 Asian; 5 Native American; 9 other. Nineteen inmates did not report their ethnic backgrounds. Table 2 lists the crimes and the number of

inmates incarcerated for each offense.

Sample two, the comparison sample, was comprised of 344 employees holding white collar positions of authority. Incompleted instruments for thirteen individuals reduced the total comparison sample to 331 participants. There were 150 males and 181 females. The comparison, or work-place, sample included 30 loan officers from two midwestern banks; 73 employees of a midwestern city with a population of approximately 25,000; 113 employees of a second midwestern city with a population of approximately 100,000; 84 employees of a midwestern county government, and 44 employees of a midwestern state university. All workplace participants held supervisory, management, or administrative positions. Appendix A lists the job descriptions of the individuals who comprised the comparison sample. Table 3 presents a list of the organizations that participated in the study, the number of volunteers from each organization, and the dates the tests were administered to the white collar employees. Of the 331 workplace employees, 324 were White, 2 were Black, 1 was of Hispanic origin, and 4 did not report their ethnic backgrounds.

The mean age for both samples was 49 years. The range was 18 to 71 years for those not in prison, and 20 to 71 for the incarcerated offenders.

Educational levels for both groups are presented in Table 4. Approximately 87% of the non-offenders received post-high school educations versus 72% of the offenders. Twenty-nine percent of the non-offenders completed graduate school versus 29% of the offenders.

Test instruments were administered by this researcher to prisoners at the prison sites and to employees at their workplaces. The research was conducted under the guidelines of the Committee for Research Involving Human Subjects, Department of Psychology, Iowa State University, and the Graduate College Human Subjects Committee of Iowa State University, as well as the U. S. Federal Bureau of Prisons, Department of Justice, Washington, D.C.

For the inmate sample, incarcerated white collar offenders were notified by case managers through either verbal or written communication that a study on white collar crime was being conducted by a doctoral candidate from Iowa State University, and that they were granted permission to attend a general information session to be conducted by the researcher. In the workplace, administrators of the workplace organizations informed white collar employees through written memoranda that a study was to be conducted and that a general information session was to be presented by a doctoral candidate from

Iowa State University. The same informational presentation describing the study was made to both sample groups immediately preceding the testing sessions. At the end of the 15 - 20 minute presentations, questions and concerns regarding the study were addressed. Informed Consent Statements were then distributed to individuals who volunteered to participate in the study, and all other individuals were excused. The General Information Statement is presented in Appendix B. Informed Consent Statements for the prison population and the workplace population are presented in Appendices C and D, respectively. For both sample groups, the date, time, and location for the conduct of the general information presentation and the conduct of the research were designated by the administrators of the correctional institution or the workplace organizations. In the workplace, four sessions were held over two consecutive days so that not all management employees would be absent from their respective offices at the same time. In one workplace organization, two additional sessions were held to increase the sample size (Table 3).

For both sample groups, the question most frequently asked after the general information presentation concerned the availability of the results, to the participants, upon

the completion of the study. Subjects in the inmate group were informed that a report of the findings will be forwarded to the warden of each respective prison and will be available to them through their respective case managers. For the white collar employees, a public presentation of the findings will be made within three months of the completion of the study. Employees will be notified of the time and place of the public presentation by their respective organizational administrators. Except for a number of police officers who expressed skepticism, there were no concerns about the study expressed by other white collar employees. The most common concern among the inmate sample regarded the anonymity of responses to the instrument items. Volunteer participants were not identified by name or identification number, or in any other manner. Responses to instrument items were completely anonymous, and an informal debriefing presentation was made to participants upon completion of the instruments (Appendix E).

Overall, a total of 709 individuals volunteered for the study, and the final data set was comprised of response sets for 677 participants. There were no remunerations nor incentives provided for participating in this research.

Measures

A detailed description of the five instruments that were administered to each of the 709 volunteers follows. At the time of the test administration, each participant was given a manila envelope containing five instruments. The researcher then described each instrument, after which participants were instructed to answer all questions and to mark answers on the separate answer sheets provided. One of the five instruments, The California Psychological Inventory (CPI) (Gough, 1956) was the only instrument that was uniformly ordered. Because the CPI takes approximately one hour to complete, participants were instructed to begin with the CPI and, upon completion, to take a fifteen minute refreshment break before continuing with the remaining questionnaires. This routine procedure across all testing sessions was an attempt to reduce response effects due to fatigue over the approximate three-hour testing period. Coffee and cookies or cake were made available by the researcher or by the correctional institution or workplace organization.

Coding of the answer sheets that were contained in each participant envelope was completed by the researcher at the end of each test administration session.

The Irritability Scale. The Irritability Scale (Caprara, Cinanni, D'Imperio, Passerini, Renzi, & Travaglia, 1985a) measures the general propensity to perceive events as frustrating, and frustration is a way of responding to internally or externally imposed barriers. The scale was developed primarily for detecting individual differences in the tendency to display aggressive behavior. The Irritability Scale and scoring procedure are presented in Appendix E. Thirty items are summed to produce a single score (Appendix F). According to the frustration-aggression theory, aggressive responses, whether active, passive, indirect, or direct, result from being frustrated (Buss, 1961). Irritability is related to a general propensity to perceive events as frustrating as well as to a general propensity to overreact emotionally to events that are perceived as frustrating. Irritability is directly connected with aggressive behavior (Caprara et al.).

As reported by Caprara et al. (1985), internal consistency, test-retest reliability and split-half reliability have been examined. Coefficient alpha was .81 ($p < .001$); test-retest correlation was found to be .83 ($p < .001$); and the reliability coefficient by the Spearman-Brown method for the two halves (odd-even) was

.90, $p < .001$. The results of principal components analysis found that the factorial structure of the scale displays a high degree of stability with respect to various groups of subjects (i.e., different languages, nationalities and cultures).

Evidence of content validity was clarified by interrelationships with other measurements. Evidence of construct validity has been established using principal-components analysis, analysis of canonical correlations and oblique factorial solutions. (See Caprara et al., 1985a for a detailed report of the experimental and correlational studies conducted to assess the validity of this instrument.)

Administration time was approximately 20 minutes.

The California Psychological Inventory (CPI). One of the fundamental purposes of the CPI scales is to identify persons who will be described by others in distinctive ways. A second purpose of the CPI scales is to predict what people will say and do in defined situations. Twenty-five of the thirty-one scales of the California Psychological Inventory (CPI) comprised of 462 one-sentence items were used in the present study to describe personality attributes. Appendix G lists the scale title and descriptions, and common abbreviations for the scales

are presented in Appendix H.

Six CPI scales were not used in the present research. The goal of the present study was to examine differences between two categorical groups: non-offenders and offenders of white collar crimes. Distinctions between male and female white collar non-offenders versus offenders were not evaluated as part of the present research. Therefore, Femininity/Masculinity, Baucom unipolar scale for femininity, and Baucom unipolar scale for masculinity, the three scales measuring femininity/masculinity, were not used. In addition, the three CPI Vector scales were not used. Vectors 1, 2, and 3 (V1, V2, V3) are higher order scales under which are subsumed other CPI scales. Since all of the remaining scales were used, the decision was made to omit the Vector scales.

Reliability and validity data for the CPI have been reported in numerous journals over the years, including Gough (1987) and Megargee (1972). Internal consistency, parallel forms, and test-retest reliability coefficients were computed for 20 CPI scales. Alpha coefficients ranged from a low of .52 on (SA)Self-acceptance to a high of .80 on (SC)Self-control. The range of correlations for males on parallel forms was .46 on (IN)Independence to .83 on (WB)Well-being; for females the range was .42 on

(EM) Empathy, (CM) Communality, and (FX) Flexibility to .83 on (SC) Self-control. Test-retest correlations for males ranged from a low of .43 for (CM) Communality to a high of .76 for (SC) Self-control. For females, the values ranged from a low of .58 for (EM) Empathy and (AI) Achievement via Independence, to a high of .79 on (IE) Intellectual Efficiency. The interpretations of findings for the CPI scales were made based on Gough (1990, 1987, 1985), McAllister (1988), Megargee (1972), Groth-Marnat (1984), Wink and Gough (1991), and others where indicated.

Complete information regarding normative data and scale development are available in Gough (1987).

Assessment time was approximately one hour.

The Biographical Questionnaire (BQ). A systematic method of collecting and measuring life history experiences was developed by Owens (1976). In its initial stage the BQ was a 659-item instrument based upon 2,000 item specifications covering a broad range of prior experiences such as family life, religious activities, and socioeconomic circumstances. Factor analytic techniques were applied in the reduction of the BQ to 118 items. Independent factor analyses of the items by sex resulted in the identification of 15 interpretable factors in the female data and 13 in the male data (Owens & Schoenfeldt,

1979). An investigation of the factor structure of the BQ (using a large sample of college students) by Eberhardt and Muchinsky (1982) provided coefficient alphas for the female factors that ranged from .70 (Independence/ Dominance) to .89 (Academic Achievement); and for males from .67 (Independence/Dominance) to .89 (Academic Achievement). Appendices I and J present the titles, descriptions and reliabilities of the factor structure for males and females according to Eberhardt and Muchinsky. In the present study, an adaptation of the BQ factors (or scales) that are presented in Eberhardt and Muchinsky (1982) were used to assess biodata information. Items were selected that were common for both males and females to comprise 12 general scales that were not gender specific. Thus, the 15 factor female BQ and the 13 factor male BQ were reduced to twelve factors, hereafter referred to as scales, that did not require sex differentiation in measuring responses. The scale titles, descriptions, and coefficient alpha reliabilities based on the sample populations of the present study are presented in Appendix Ka. Administration time was approximately 30 minutes.

The PDI Employment Inventory. The PDI Employment Inventory, or EI (Paajanen, 1988), is an honesty test that is designed to predict productive or counterproductive work

behavior of potential job employees. Paajanen (1988) described productive employees as those who are reliable, display good work habits, and are motivated to conform to company policies. Alternatively, counterproductive employees are those who display characteristics such as instability, risk-taking, irresponsibility, and dishonesty. The EI was developed on two samples: 4,652 job applicants, and 109 college students. In its final form, the EI contained 97 items from which four scales are derived: the Performance scale, the Tenure scale, the Frankness scale, and the Infrequency scale. The Performance and Tenure scales of the EI were used to evaluate potential work behavior differences between offender and non-offender groups. The Frankness scale is a direct component of the Performance predictor, and it is an inverse lie scale. The Infrequency scale is an index of probable random responding. Examples of true-false items of the four scales are presented in Appendix L.

Paajanen (1988) presented reliability and validity data. Estimates of test-retest reliabilities for the EI scales are: Performance, .78-.89; Tenure, .68-.77; Frankness, .84-.90. Infrequency scale scores are not expected to be stable over time because the base rate of keyed responses is low, and because high scale scores can indicate random

responding (Paajanen, 1988). Validities ranged from .26 to .34 for the Performance scale, and from .07 to .26 for the Tenure Scale.

The Performance and Tenure scales of the Employment Inventory were used in the present study to evaluate differences between offenders and non-offenders along several dimensions. For example, low EI responses showed a number of distinct patterns, including: records of rule violations, doing illegal things, having distant and perhaps manipulative relationships, and trying to create an unrealistically good impression.

Probscor. Probscor is the sum of responses to three questions intended to assess an individual's perception of risk involved and probability of apprehension and conviction (for commissions of white collar offenses). The Probscor items (Appendix M) were developed for this study. Cronbach coefficient alphas for the Probscor scale for the two contrasted study samples were: .79, non-offenders (N=331), and .77 for offenders (N=323).

In summary, 43 scales from five instruments were used in the study: the Irritability scale; the CPI, 25 scales; the GBQ, 12 scales; the Employment Inventory, 4 scales; and Probscor, 1 scale.

STUDY ONE

Introduction

The present research consists of two parts. In Study One, theories that could offer explanations for white collar criminality were empirically tested. The principles of adaptation-level phenomena, frustration-aggression theory (Dollard, 1939; Buss, 1961), and expectancy theory (Vroom, 1964) are investigated. These three theories of learning, personality and decision-making were suggested as possible explanations for white collar crime The present research makes distinct contributions to the study of white collar criminality. First, in contrast to most studies on criminal behavior, the specific focus is on white collar crime. Second, it is a field study, in contrast to frequently reported case studies. A control group of white collar employees holding positions of authority comprised the comparison sample, and incarcerated white collar offenders were the study sample. And, third, the sample size was sufficiently large to test the suggested theories.

Theorists have set forth several likely explanations for criminal behavior. For example, evidence exists that frustration and aggression are causes for anti-social behavior (Dollard, 1939; Buss, 1961), and sociologists, criminologists, and psychologists have suggested that such

anti-social behavior in white collar offenders may be associated with characteristics of overconfidence in personal power (Delord-Raynal, 1981) and feelings of omnipotence (Bromberg, 1965). Spencer (as cited in Coleman, 1985, p. 196) has described white collar offenders as having outstanding features of ambition, drive, and a desire for high social status; and Coleman (1985) stated, "While the lower-level functionaries involved in organizational crimes may act out of conformity and obedience, the executives giving the orders are usually pursuing those elusive goals of wealth and success" (p. 201). Also, "Along with the desire for great wealth goes the desire to prove oneself by 'winning' the competitive struggles that play such a priminent role in the American economic system. The desire to be 'a winner' provides another powerful motivation for illegal activities" (p. 199). Sociologists Meier and Geis (as cited in Geis, 1982) believe that individualism, hedonism, and materialism are phenomena of white collar crime (p. 98).

The suggestion by most investigators who take a sociological stance is that explanations for white collar crime must be sought in the structural causes for motivation to commit such offenses (e.g., the culture of

the organization). Coleman (1985) stated:

> Most explanations of white collar crime rest upon a thick layer of unexamined assumptions about human nature and motivation. Without explicitly saying so, most analysts assume that people are driven by a desire for more and more material possessions and by the hope of besting their fellows in life's competitive struggles" (p. 202).

Evidence exists in the literature that may support such theoretical assumptions.

The adaptation-level phenomenon, for example, implies that an individual's feelings of satisfaction or dissatisfaction are relative to what has been previously experienced. For example, current achievements will produce satisfaction if they are perceived as greater than past achievements and, alternatively, current achievements will produce dissatisfaction if they fall below previous accomplishments. An assumption of the adaptation-level principle is that, once achievement is attained, the individual adapts to that level of success. What was formerly a positive feeling now becomes neutral, and what was formerly neutral now becomes negative. An initial feeling of pleasure may be experienced with an increase in

income or social prestige, then adaptation occurs (i.e., the income, social prestige is seen as normal) and, finally, something even greater is required for another surge of happiness or well-being. An example of this phenomenon may be the high achieving employee, manager, or executive who is continually extending his or her ladder of success -- when one goal is reached, another is sought. "The adaptation level principle explains why material wants can be insatiable - why, for example, Imelda Marcos, wife of the former president of the Philippines, living in splendor amidst nationwide poverty, would require 2,700 pairs of shoes, more than she could ever wear in her lifetime" (Myers, 1989, p. 395).

Closely related to the adaptation-level principle is the concept of relative deprivation. This is the feeling of being less well off than others with whom comparisons are made. Yuchtman (1976) observed that feelings of well-being, especially among white collar workers, are closely connected with whether their compensation is equitable to others. "In every day life, when people increase in affluence, status, or achievement, they similarly raise the standards by which they evaluate their own attainments" (as cited in Myers, 1990, p. 382). People climbing the ladder of success look up, not down (Gruder, 1977; Suls & Tesch,

1978; Wheeler et al., 1982) creating new standards of comparison with each newly achieved goal.

Conventional explanations of white collar criminality assume that the desire for financial gain is the principal cause (Lane, 1954), but some researchers have pointed out that financial self-interest is only part of a larger motivational complex that is deeply engrained in white collar workers (Coleman, 1985; Delord-Raynal, 1981). Individuals who commit white collar crimes may do so to enhance or ensure the viability of the status, power, success, and control they have already achieved, or wish to achieve. The money is but the means to these ends. When an individual's standards have been raised above the point at which the goal (e.g., affluence, social prestige, salary increases, etc.) can be achieved and adaptation is thwarted, it is possible that the sense of well-being is diminished and frustration is aroused. Thus, frustration-aggression theories could explain white collar criminality.

While frustration and aggression theories are seen primarily in the context of violent criminal behavior, Berkowitz (1989, 1962) has cited many studies of frustration-aggression phenomena including research suggesting the arousal of aggression when competitive goals are blocked. Some studies have shown that frustration is

anything that blocks a goal (Dollard, Doob, Miller, Mowrer & Sears, 1939). Along these same lines, Myers (1990) noted that frustration occurs when there is a gap between our expectations and our attainment of goals. Such frustration "... is especially pronounced when one's motivation to achieve a goal is very strong, when one expected gratification, and when the blocking is complete" (Dollard, as cited in Myers, 1990, p. 377). For these reasons, it may be possible for frustration to be aroused when the ladder of success can no longer be extended, or when, for other reasons, the desire to gain prestige and social stature is blocked.

The classic model of frustration-aggression predicts that frustration creates motivation to physically or violently aggress (Dollard et al., 1939), but it is possible that passive aggression rather than violent aggression is operating in the case of the white collar offender. Buss (1961) believed that there are *instrumentally* aggressive responses that are reinforced by the same reinforcers that follow any instrumental responses: food, water, money, sex, dominance, approval, and the removal or escape from aversive stimuli. Buss (1961) also distinguished between direct and indirect aggression as well as passive and active aggression.

Examples of direct and indirect aggression are overt and covert behavior (e.g., direct hostile remarks and spreading gossip). The distinction between *hostile* and *instrumental* aggression was also made by Feshbach (1964). Hostile aggression occurs when the primary goal is to do harm; instrumental aggression is aimed toward the goal of attaining some other objective, such as money or social status (Feshbach, 1964). The crimes of white collar offenders may be indirect as well as passive; these acts may be instrumental responses that are both extrinsically reinforced through the acquisition of money and, subsequently, through the cessation of aversive situations (such as the blocking of one's goal toward desired achievements of money and/or power). Of course, not all who are frustrated will aggress. Certainly, most individuals acquire socially acceptable responses to frustration.

In summary, the loss of feelings of well-being related to the adaptation syndrome and relative deprivation, the possible arousal of frustration and passive aggression tendencies, and elevated motivational needs for achievement, ambition, and success may be experienced by individuals who commit white collar crimes.

The question that was addressed is, "Are the above

characteristics any different for the offender than for the non-offender?" As has been shown, there are theories that could support such a difference. Yet, while Nettler (1982), and the others mentioned, have concluded that influences affecting individuals who commit white collar crimes include the push for money and power, one cannot be suspect of all who have drives toward money and power. Implicit in the emphases in the literature on such explanatory drives is that white collar offenders are excessive in these desires relative to other individuals. These suggested characteristics of white collar offenders (i.e., excessive desire for success, excessive ambition, excessive materialism) have not been experimentally tested with population samples such as that of the present field study. While some of these characteristics may be representative of the individualism and materialism of our society, there are many successful white collar executives who do not commit crimes but who may also display the same motivational tendencies.

The purpose of Study One was to investigate whether these salient characteristics of white collar offenders are also common characteristics of non-offenders. Therefore, in Study One, empirical tests were made of the hypotheses that offenders compared to non-offenders hold

greater motivation toward achievement, success, ambition, and materialism, and have stronger frustration-aggression tendencies. Further, through self-report inventories, an assessment was made of the perception of risk involved in committing white collar crimes, and the expectancy of outcomes of such offenses.

Spence (1985) discussed how individualism has altered the value system of the marketplace; and Coleman (1985) noted that solutions to organizational financial difficulties that were at one time socially unacceptable are now just a way of doing business (e.g., illegal mergers and acquisitions, false advertising). Corporate crimes (crimes committed with the support of a formal organization that are intended to further the goals of the organization) involve attempts to control the marketplace, fraud and deception, bribery and corruption, and violations of civil liberties. While organizational crime is not the same as white collar criminality, the opportunity and commissions of white collar offenses may be fostered by perceptions of such organizational cultures and norms, as well as by the position of the white collar worker (through which access to criminality is gained).

Mischel (1973, 1984a) has pointed out the importance (in the prediction of behavior) of considering not only the

situation but also the individual's expectancy of the outcomes of behavior, and the values one holds. The white collar worker who uses rational calculations in boardroom decision processes may display the same kind of behavior in the commission of white collar crimes: outcomes and the value of such outcomes are anticipated along with the probability of attaining the outcome, and the risks and costs involved. Vroom (1964) proposed such a theory for the prediction of work motivation, and it has been described by Wahba and House (1974) as a widely accepted theory. Although Vroom's (1964) expectancy theory has historically been applied to organizational work behavior, it was adapted in Study One for predicting white collar criminal behavior. The adapted model would predict that the tendency to engage in crime would be high if the expectancy of achieving the outcome (financial gain) is high, and the financial gain is highly valued. The value of the gain to the white collar offender may be the extrinsic gain, or the tangible increase in finances, as well as intrinsic feelings of increased power and status which, according to the literature, are forces driving white collar crime. Two additional elements of the model included the perceived risk of apprehension and punishment. Symbolically,

$$CO_i = [E_{ij}V_j) + (S_i)] - R_i, \text{ where}$$

CO_i = motivation to commit the criminal offense

E_{ij} = the expectancy that the criminal offense (CO_i) will be followed by outcome j (financial gain); R-1

V_j = value of the outcome (Capacity for Status + Narcissism scales of the California Psychological Inventory)

S_i = situational opportunity to commit CO_i (the criminal offense); a constant for both groups

R_i = perceived risk of apprehension, conviction and punishment (Probscor Questionnaire)

With the exception of the situational opportunity and risk components, this model follows from Vroom's model that predicts forces toward behavior as described by Mitchell and Beach (1977). In the present study, the model was extended to include the sum of the strength of an individual's desire for ambition, success, and self-interest. The Capacity for Status (CS) scale of the California Psychological Inventory (Gough, 1968) measures ambition, success, and materialism, and the Narcissism scale measures tendencies toward cathexis of power, risk-seeking, disesteem for others, need for attention, and impatient willfulness (Wink & Gough, 1990). The tendency to perceive events as frustrating and the tendency toward

aggressive behavior were also included as a single component in the model. This component is referred to as "I" from the Irritability Scale (Caprara et al., 1985a); which measures frustration and aggression tendencies. The final model was

$$CO_i = CS + I + [(E_{ij}V_j) + (S_i)] - Ri.$$

Statistical Analyses

To test the significance of the hypotheses that offenders relative to non-offenders hold greater motivation toward frustration-aggression tendencies, materialism, ambition, achievement, and success, *t*-tests of mean differences were performed on responses of non-offenders and offenders to the Irritability scale, the Achievement via Independence (AI) scale and the Capacity for Status (CS) scale of the CPI. *d* values, measures of the size of the effect on the two groups produced by the discriminant function, were also calculated. The effect size *d* is the difference between the ratio of difference between the group means to the standard deviation (Cohen, 1977). In the present study, the pooled within-group standard deviation was used to calculate the *d* statistic. For purposes of this study, negative *d* values indicated that scoring was in the direction of the offender group.

To test the significance of the model for its ability to

differentiate between the non-offender and offender groups, the variables of the model were combined to produce the predictor score (CO_i) for every person in the study. A t-test of mean differences in composite scores for offender/non-offender groups was performed to determine the value of the model for discriminating between the two groups, and the *d* statistic was calculated to determine the effect size of the discriminating power of the function between the two groups.

Results

T-tests of mean differences and *d* values were performed on the Irritability scale, the (AI)Achievement via Independence scale and the (CS)Capacity for Status scale (see Tables 5 and 6). Mean differences were nonsignificant for the Irritability scale; $d = -.04$. Significant mean differences were found for the (AI)Achievement via Independence scale, $t(674) = 5.90$, $p < .0001$. The means (and standard deviations) for the non-offender and offender groups were 23.39 (5.36) and 20.94 (5.45), respectively. The *d* value was .45. Mean differences were nonsignificant for the Capacity for Status scale; $d = -.05$. On average, offenders do not experience, more than non-offenders, excessives drives toward achievement, ambition, and success, as measured by the AI and CS scales, or tendencies

toward aggressive behavior from frustration, as measured by the Irritability scale.

A t-test of mean differences of the composite group scores of the model was significant $t(647) = -9.83$, $p < .0001$ (Table 7). The means and standard deviations for the non-offender and offender groups were 108.27 (34.20) and 141.76 (50.69), respectively. The *d* value was -.39. When variables such as perceptions of the probability of risk involved, and narcissism were considered along with measures of of achievement, ambition, and success, discrimination was seen between offenders and non-offenders. The means, standard deviations, and *d* values for the two scales that measured the above dimensions, Probscor and Narcissism were: 2.48, .74, -.68 (non-offenders), and 27.21, 7.25, -.64 (offenders), respectively.

Discussion

While independently tested hypotheses that offenders exhibit greater tendencies than non-offenders toward achievement, desire for sucesss, ambition, or aggression from frustration were nonsignificant, the hypothesized model that was an extension of those hypotheses was significant. The (CS)Capacity for Status scale predicts ambitiousness, and desire for success and high social

status. There were no significant differences between the two groups on these dimensions. Drives toward achievement were measured by the (AI)Achievement via Independence scale. On the average, the non-offender group scored significantly higher on this scale. The AI scale measures achievement given a particular type of situation, however. Specifically, it measures achievement in unstructured, undefined settings that call for independent ingenuity and work. White collar workers are achievement oriented, for they have achieved positions of authority. It is possible that the explanation for the finding of higher mean differences for achievement for non-offenders is that dimensions other than achievement are measured by the AI scale. For example, other behaviors described by AI include creativity and self-actualization (Groth-Marnat, 1984). It is possible that offenders and non-offenders alike may be equally creative but, conjecturally, lower offender self-actualization could be reflected in dissatisfaction and a lack of fulfillment, other possible explanations for white collar criminality.

The (AC)Achievement via Conformance scale measures achievement in unambiguous situations where rules and regulations are more stringent and the environment is more structured. Although this scale was not identified apriori

as a variable for the model, it was one of the CPI scales that was administered to the study samples. An inspection of the AC scale also revealed significant mean differences in favor of the non-offenders. Based on these similar findings, it appears that factors other than motivation toward achievement oriented behavior are operating. An interesting point, however, is that high scoring persons on the AC scales are described as conscientious, considerate, reasonable and responsible, and high AI scorers tend to be described as foresighted, independent, and rational (Groth-Marnat, 1984). Perhaps these are the dimensions of the scales for achievement that that are reflected in the significant mean group differences. If the converse is true for offenders, that is, offenders are less considerate, less reasonable, less responsible, etc., then these empirical findings lend support to the hypotheses of several researchers (Paajanen, 1988; Berland, 1989; Ones, Viswesvaran, & Schmidt, 1990) that conscientiousness is a construct that distinguishes between productive/counterproductive and honest/dishonest workplace behavior.

Scores on the Irritability scale (Caprara et al., 1985a), measuring aggressive tendencies from frustration, were not significantly different between groups. Frustration is a way of responding to externally or

internally imposed barriers but, based on these findings, aggressive behavior is not predicted to be greater for either group. An important point regarding this finding concerns within-group (i.e., within criminal groups) rather than between-group (i.e., between criminal and non-criminal groups) differences. Sociological and psychological literatures are filled with evidence for aggression - based explanations for other types of criminality, but for white collar offenders aggressive tendencies are not greater relative to non-offenders. The lack of significant differences in frustration-aggression tendencies for white collar offenders may also be associated with recent findings that, relative to other types of offenders, white collar criminals are not as sensitive to the prison setting and, thus, do not generally have difficulty adapting (Benson, 1985). This latter point will be elaborated upon in a later section relating to the usefulness of responses from prison samples. The point, however, is that evidence in these findings suggest that within-group differences (i.e., within criminal types) exist on the frustration-aggression dimension.

To summarize thus far, significance tests for group differences did not indicate that offenders, compared to non-offenders, hold excessive drives toward achievement, ambition, success, and frustration-aggression behavior.

Explanations for these findings were advanced. The results of Study One are consistent with Merton's (1938, 1957) Means-end Theory in which similar people have different standards by which to attain the same goals. In the case of the white collar offender, societal values of ambition, success, desire for status are no different than for the white collar non-offender, and not all who desire financial gain commit criminal acts. Much emphasis has been placed on these behavioral characteristics of white collar offenders, but such interpersonal behaviors are not held in mutual exclusivity by this group.

Other factors are operating in conjunction with, or independent of, these dimensions. This is, in fact, what was revealed when the scales for Narcissism and Probscor were combined with the scales of (CS)Capacity for Status and Irritability to form the hypothesized model of Study One. The model differentiated white collar offenders and non-offenders. Gough (1968) found a similar pattern in predicting college attendance of high school students where the (AC)Achievement via Conformity scale predicted only modestly. When (DO)Dominance, (CS)Capacity for Status, and (GI)Good Impression were added to the equation, however, a satisfactory level of accuracy in prediction was seen.

In the present case, offenders scored higher on the Narcissism and Probscor scales. Factor analyses of the

items for the Narcissism scale have shown that five common themes are represented by this scale: cathexis of power, risk-seeking propensity, need for attention, disesteem for others, and impatient willfulness (Wink & Gough, 1990). The Narcissism scale detects behavioral tendencies toward inflated self-esteem and fantasies of power (i.e., cathexis of power); devaluation of others, competitiveness and envy (i.e., disesteem for others; entitlement and feelings of being above and beyond the dictates of ordinary social conventions). In addition, Narcissism measures feelings of underappreciation, and tendencies toward undercontrol of aggressive drives.

In the hypothesized model, (CS)Capacity for Status and Narcissism were combined to represent the value that an individual would place on financial gain. High scores on the CS scale indicate ambition, versatility and self-confidence and when these dimensions are considered in combination with the power drive, inflated esteem, and other previously mentioned tendencies measured by Narcissism, the accuracy in discrimination increased. That is, the offenders scored higher, on average, than the non-offenders in propensity to commit a crime.

The Probscor scale was developed for the purposes of the present research. It assesses an individual's perception of risk-involvement in the commission of a crime for

personal financial gain. Higher mean scores on the Probscor scale were seen for offenders, relative to non-offenders, indicating that offenders perceived a greater risk for committing a white collar crime.

Alternative explanations exist for this finding. First, incarcerated offenders may estimate higher chances of apprehension and conviction simply because they were, in fact, caught, convicted, and incarcerated. A repeated theme that was heard during this data collection from convicts across the country and across correctional institutions was, however, that the act that resulted in the incarceration was not considered a serious offense, that everyone in business does it, that it's the way one has to operate to stay in business, and that while everyone else does it, too, not all are charged. This consistent pattern of statements from offenders could be interpreted to mean that the offenders did not perceive the risk as great for their own respective offenses but, given their incarceration for a lesser crime, the probability of conviction for a more serious offense was viewed as great.

Benson (1985) offers a second alternative explanation for these types of statements by incarcerated offenders. Benson proposes that such statements reflect adaptive strategies whereby the offenders deny their criminality in order to maintain a legitimate persona. That is, the white

collar offender minimizes the seriousness of the crime so as to maintain a non-criminal identity.

In any case, the data showed greater offender mean score differences on Probscor indicating that the offenders perceived the risk as great. But, nonetheless, they took the chance. The higher mean score on the Narcissism scale that measures propensity for risk-taking would empirically support this latter view. A confounding element could be the perceived degree of risk. There are large risks and small risks. Perhaps propensity to risk depends on the perceived degree of risk involved resulting in an inverted-U relationship between taking the risk and size of the risk. In any event, the conclusion is that offenders, on average, take greater chances than non-offenders. If white collar offenders believe that criminal behavior is seen as necessary and acceptable for survival in the business world, this callousness of attitude explains why such risks are taken. Since, according to the model, a higher Probscore results in a lower expectancy score (expectancy that the outcome will be attained, given the risk, was measured by Probscor minus "1"), white collar offenders appear willing to take risks even if the outcome is questionable. But, of course, that is what risk is. With certainty, there is no risk. The white collar offender may be willing to take a risk despite lower outcome

expectancies, whereas non-offenders who do not perceive the risk as great, do not also take it.

Conclusions

The nonsignificant differences reported in Study One reveal meaningful information not yet reported in the literature. Drives toward status and status-related factors have frequently been associated with white collar offending behavior, but the data show that such drives are not in excess relative to non-offenders. While these factors may be motivators that provide the impetus toward criminal behavior, they are not distinguishing characteristics, on average, of white collar offenders and non-offenders. The nonsignificant findings on the measure of aggression due to frustration is most meaningful in the context of within-criminal group behavior. That is, white collar offenders did not score higher on this scale than individuals from the general public, but frustration - aggression tendencies have been shown to be related to types of criminal behavior other than white collar criminality.

While there were nonsignificant differences for non-offenders vs. offenders on the (CS)Capacity for Status, (AI)Achievement via Independence,and Irritability scales, offenders relative to non-offenders scored higher on the perception of risk involved, lower on the expectancy of the

outcome, and higher on Narcissism. The dominant distinguishing scales in the model appear to be Probscor and Narcissism, the two scales that showed higher mean differences for offenders. Accordingly, offenders relative to non-offenders hold a great propensity for risk-taking, inflated self-esteem and disesteem for others, feelings of entitlement and being above the dictates of social conventions, a greater drive for power, and undercontrol of aggressive drives, relative to non-offenders. Thus, while measures of (CS)Capacity for Status and frustration-aggression do not independently differentiate white collar offenders from non-offenders, and expectancies were greater for non-offenders compared to offenders, a distinction between groups was drawn with measures of perception of risk and narcissism.

If the values for two scales contribute to findings of significant mean differences between the two groups, are there other scales that can also be added to predict propensity to commit white collar crimes? The exploratory research in Study Two elaborates on the findings of Study One by examining responses to 43 measures that predict behavioral tendencies.

STUDY TWO

Introduction

While in the past sociologists have emphasized the external environment and criminal events, the unit of analysis for psychological research and theory has been the individual. Psychologists, traditionally, have sought to explain criminal behavior through psychological factors such as intelligence or personality, biological factors such as genes, or learning theory which suggests that behavior is determined by one's environment. Another theory that is applied to the exploration of workplace behavior is modern organizational theory, a social systems framework similar in many ways to Reckless's (1961) model. It is from this model that Study Two of the present study approaches the investigation of white collar criminality; specifically, an attempt is made to identify individuals who may be predisposed to commit white collar offenses.

Industrial/organizational psychologists, who form a subspecialty of psychology, restrict their investigation of individual behavior to the workplace. Muchinsky (1990) has stated that, "while psychologists have traditionally studied *individuals*, it is obvious that they cannot understand employee behavior apart from the social or

organizational context in which employees work" (p. 271). Guion (1965) defines industrial/organizational psychology as "the scientific study of the relationship between man and the world at work: the study of the adjustment people make to the places they go, the people they meet, and the things they do in the process of making a living" (Muchinsky, 1990, p. 6).

Classical organizational theory, the first psychological theory to describe the organizational context, came out of the discipline of sociology. Classical theory sought to describe the structural relationships between functions, individuals, goals, and authority within the organization. Neoclassical theory followed with its emphasis on individual differences; and today modern organizational theory adopts a "systems approach" where all parts affect all other parts.

In modern organizational theory, four components of a social (organizational) system contribute to the understanding, explanation, and prediction of behavior: the role of the individual, the norms (which establish the expected behavior of groups), the sources of power (employee, employer and organizational), and the organizational culture (attitudes, values and customs of an organization). Modern theory has provided a framework from

which workplace behavior can be explored; it integrates person variables and situational (environmental) variables. Thus, while sociologists have impressively paved the way toward a better understanding of the forces behind crime, beginning with Sutherland's (1939) deterministic view, and psychologists have traditionally sought personality explanations for criminal behavior, both perspectives have also posited theories that account for psychological as well as environmental variables.

Hirschi and Gottfredson (1988) have pointed out that, in recent years, the economic perspective has promoted renewed interest in deterrence research and classical models of crime causation and, as we have seen, biology has also returned to the arena, reminding us that there is considerable evidence that heritable individual characteristics play a significant role in crime causation (Mednick & Christiansen, 1977, cited in Buikhuisen and Mednick, 1988; Wilson & Herrnstein, 1985). Hirschi and Gottfredson (1988) state, "...time is ripe for a theoretical perspective sufficiently broad to incorporate insights from the various disciplines interested in crime, sufficiently flexible to be applicable to issues arising throughout the life course, and at the same time sufficiently specific to suggest concrete, practical

prevention strategies" (as cited in Buikhuisen & Mednick, 1988, p. 9).

Psychology can contribute to criminology research by the application of its theories, both the traditional as well as the more recent models of industrial/organizational behavior. The goal of Study Two was the identification of psychological, behavioral, and situational factors that can contribute to criminal behavior. More specifically, three interrelated factors were considered in the process of personnel prediction: 1) evidence of patterns of relationships between individual characteristics, 2) past behavior, and 3) the individual's perception of the situation.

Along with many other researchers who have advanced theories of the predictability of behavior, Mischel (1984a) and Magnusson and Endler's (1977, 1980) theories are directly specific to Study Two. In his writings on the predictability of behavior and the structure of personality, Walter Mischel (1984a) used several examples to illustrate the means by which behavior can be predicted: predictions from an individual's self-report, predictions from understanding the psychological environment (e.g., social learning variables such as models and feedback), and predictions from relevant past behavior. In Mischel's

(1973, 1984a) conative social learning theory, five "person variables" are important in understanding how the individual interacts with the environment: competence, how situations are perceived, expectancies of outcomes, personal standards, and values. Mischel (1984a) has stated, "Obviously people have characteristics, and overall 'average' differences in behavior between individuals can be abstracted on many dimensions and used to discriminate among persons for many purposes" (as cited in Zucker et al., 1984, p. 278). Also, "different goals require different foci and measurement strategies, all of which may be legitimate routes for moving toward one's particular objectives" (as cited in Zucker et al., 1984, p. 273), and "the results of comparing differences *between* people on some norm or standard or dimension can help with gross screening decisions, permit group comparisons, and answer many research questions" (as cited in Zucker et al., 1984, p. 274).

Magnusson and Endler (1977, 1980, cited in Crider et al., 1989) suggested three factors, similar to those of Mischel (1984a) that must be considered in predicting behavior. First, the traits of the person (i.e., person variables) must be considered; second, how the person generally manifests particular traits in particular

situations; and, finally, how the situation is perceived by the person.

It was, therefore, the thesis of the present study that, based on findings of previous research, although behavior is responsive to the environment, it is also influenced by one's inner dispositions. Three factors were addressed in developing the prediction model: the individual's traits, the individual's behavior in past situations, and the individual's perceptions of personal and work-related situations (e.g., attitudes toward the work itself, and toward fellow employees). Each of these three factors were addressed as follows:

The Individual's Traits. According to some, the relationship between personality, or traits, and crime has not yet been clarified. In a review of studies on personality and criminality, Tannenbaum (1977) concluded that "there may be a criminal personality, but this may be such a complex entity that current testing procedures are not reflecting the multidimensional differences between criminals and noncriminals" (p. 228). Yet, other researchers have pointed out evidence to suggest that criminality characteristics may be relatively stable across time (e.g., Olweus, 1977; Block, 1971), and that differences in propensity to commit some criminal acts

begin before the teens and generally persist throughout life (Huesmann et al., 1984; Loeber, 1982; West & Farrington, 1977; Loeber & Dishion, 1983; Glueck & Glueck, 1968). Further, according to Epstein (1984), numerous studies have demonstrated the existence of global dispositions across situations. Among the variables that have demonstrated such dispositions are intelligence (Fishbein & Ajzen, 1974; Ajzen & Fishbein, 1977; Epstein, 1979, 1980); emotional stability and extroversion (Cattell, 1957; Eysenck, 1967; Cheek, 1982); ego resiliency and ego control (Block & Block, 1980; Sroufe, 1979); social competence (Sroufe, 1979; Arend, Gove, & Sroufe, 1979); Waters, Wippman, & Sroufe, 1979); aggression (Olweus, 1973, 1974, 1979); dominance (Moskowitz & Schwarz, 1982); and agreeableness and conscientiousness (Cheek, 1982). Since individual dispositions such as these are central to the study of behavior, it is tempting to view them as predictors of all behavior.

Mischel (1984b) noted that the history of research in the area of cross-situational consistency and dispositions has yielded persistently perplexing results suggesting much less consistency than our intuitions predict, and contradictory and inconsistent findings are seen in disposition and prediction.

The importance of investigating dispositional traits, however, has been renewed due to recent multiple studies reporting variations in behavior due to genetic influences. Bouchard, and McGue (1990) used the California Psychological Inventory to investigate the influence of genetic and environmental factors upon adult personality. Genetic influences were found on measures for (SO)Socialization, (RE)Responsibility, (SC)Self-control, (TO)Tolerance, and (WB)Well-being. The researchers concluded that 50% of the variances in a wide range of personality characteristics is influenced by genetic factors. Another recent finding indicated that, on average, 40% of the variance in measured work values was related to genetic factors, and 60% of the variance was associated with environmental factors and error variance (Keller, Bouchard, Arvey, Segal, & Dawis, 1990). Other studies over the years have related genetics to development and personality. For example, in a study of twins, Buss, Plomin and Willerman (1973) identified four inherited tendencies: emotionality, activity-level, sociability, and impulsivity. Other researchers have also reported evidence that individual differences in activity level are in part inherited (Owens & Sines, 1970; Scarr, 1966). Research using responses from the scales of the California

Psychological Inventory have provided support for evidence of genetic influences in adolescence and adulthood (Dwarkin, Burke, Maher, and Gottesman,1976; and Goldsmith, 1983), and Ellis (1982) pointed out that "...most of the evidence is extremely supportive of the proposition that human variation in tendencies to commit criminal behavior is significantly affected by some genetic factors" (p. 43). Genetic influences of criminality have also been repored by Guze et al. (1970), and Plomin et al. (1980). In a study of twins and genetics, Rowe (1986) found that, "the principal genetic correlates of delinquency appear to be deceitfulness and temperamental traits" (p. 513), and Rushton et al. (1985) have further stated, "conversely, support for the inheritance of law-abiding behavior comes from studies assessing the hertiability of such scales on the California Psychological Inventyory as (RE)Responsibility, (SO)Socialization, and (SC)Self-control" (p. 70). Support for Wilson and Herrnstein's (1985) theory that delinquents and non-delinquents differ in the innate traits that affect the perceived value of near vs. delayed rewards may be a reflection of the genetic correlation between impulsivity and delinquency that Rowe, 1984 reported.

Thus, while some researchers report that global

dispositions exist across situations and other researchers have shown that prediction from disposition is inconsistent, there are those who point to the genetic influences of criminal and other behavior.

The goal in this study is to extend the understanding of white collar criminality by identifying distinguishing psychological dimensions that would predict behavioral tendencies of offenders and non-offenders. Reviews of the literature that address the relationship of personality and criminality have illustrated the ability of the California Personality Inventory (CPI) to discriminate effectively between criminal and non-criminal groups (Laufer, Skoog, & Day, 1982). Hogan (1983) has stated

> Although many sociologists would disagree, individual differences in personality and character structure are related to criminal conduct. Moreover, these differences can be assessed with some precision using existing psychometric devices such as the CPI. That is, criminal conduct can be *predicted* surprisingly well using current psychometric procedures (as cited in Laufer & Day, 1983, p. 476).

Gough (1968, as cited in Laufer et al., 1982) has

pointed out that the CPI was developed as a measure oriented toward empirically illustrating "interpersonal behavior and dispositions relevant to social interaction" (p. 562).

The Individual's Behavior in Past Situations. The substantial predictive power of background data has been chronicled. Mischel (1968) notes that, while we respond to the environment, knowing how a person has behaved in the past can and does help predict how he or she will behave again. Muchinsky (1990) stated that, "The oft-used axiom in I/O psychology that 'the best predictor of future behavior is past behavior of a similar kind' is perhaps the core of the validity of biographical information" (p. 127). The literature abounds with useful applications of biographical information (Cascio, 1976; Childs & Klimoski, 1986; Lee & Booth, 1974), and Owens and Schoenfeldt (1979) have documented the validity of biographical information for a host of criterion variables.

Biographical data have been found to exhibit valuable predictive power in personnel selection. Fleishman (1988) noted that a new frontier in the area of performance prediction may be found in research concerned with the application of biographical, personal-history background measures, and that such biodata measures have been shown to

be capable of predicting a wide range of criteria from manager progress to theft behavior. Reilly and Chao (1982) concluded that the predictive power of background measures is sufficient to ccnsider them one of the few legitimate alternatives to standardized testing for personnel selection. Substantial evidence indicates that the two most valid predictors of job performance are cognitive ability tests and biodata instruments, and recent research has provided evidence against the situational specificity of biodata validities (Rothstein, Schmidt, Erwin, Owens, & Sparks, 1990).

Other research (McClelland & Pilon, 1983) indicates the relevancy of biographical data to the prediction model of the present study. In research on childhood sources of adult motives, McClelland and Pilon (1983) found that, "The need for Power is significantly higher among the adults from white-collar families than from blue-collar families, as would be expected from the fact that permissiveness for sex and aggression is also much greater in white-collar families" (p. 569). An important point these scholars make is that power-motive syndromes that are of importance in shaping adult behaviors (and that supposedly have specific child-rearing antecendents) have been identified (McClelland, 1975; Winter, 1973a). One of these syndromes

is of particular importance because it is associated with managerial success; the imperial-power-motive syndrome is associated with a need for power.

While the early influences on an individual account for social motives later in life, McClelland and Pilon (1983) note that only 10-30% of the variance in adult motive scores can be attributed to early learning experiences - that later experiences in school or adult life are also important sources of individual difference. (As has been shown, genetic influences also account for variance in individual differences.) Other researchers have drawn similar conclusions to that of McClelland and Pilon. In presenting their general theory of crime, Hirschi and Gottfredson (1988) suggested that the family enters the crime picture at two distinct developmental stages. According to these researchers, the first stage of family influence bears on the socialization of the child and presumably helps produce differences in criminality. In the second developmental stage, family factors that are related to supervision, opportunity, or resources produce differences in crime over and above the differences produced earlier.

Mischel (1984) has pointed out that our past predisposes our present behavior in critically important and complex

ways, and that obviously people have characteristics, and that overall "average" differences in behavior between individuals can be abstracted on many dimensions and used to discriminate among persons for many purposes. Knowing how a person behaved before can help predict how that same individual will behave again. Thus, dynamics of past, present and person are all involved in the prediction model in this study. The major task confronted in this study is that of identifying person-situation correlates for purposes of offender/non-offender comparison and classification. This has been a problem for psychological theorizing and until constructs that represent situations are defined, they cannot be measured. The best that can be done at this point is to recognize that, barring psychological or pathological abnormalities, there is an element of consistency in behavior from which predictions can be made.

In the present study, inferences are drawn from an individual's behavior in past situations as well as from the individual's perceptions of situation. Specifically, one approach is the identification of life history experiences, and the other approach is the identification of the individuals' perceptions of work-related situations. While neither of these approaches provides a snapshot of

specific behavior given a specific situation, biodata are factors manifest in an individual's past situation, and Mitchell (1989) has noted that biodata are especially adept at capturing situational factors that predict individual success, and biodata resist faking and falsification (Lautenschlager, 1985). Mumford and Owens (1984) suggested that biographical data, or background data, appear to offer sufficient breadth, reliability, and validity as indicators of the individual's environment and behavior in it.

Background data items, although having much in common with self-report personality measures, focus on prior experiences that have occurred in real-life situations (rather than calling for general descriptions of behavioral tendencies as do personality measures). For this reason, and because of the impressive amount of research showing that biographical, or life history, information is a consistently valid predictor, this researcher derived for this study an adaptation of Owens (1976) Biographical Questionnaire (BQ) was used to assess behavior in past situations.

The Individual's Perceptions of Personal and Work-related Situations. While the opportunity for criminality may present itself through organizational norms and the role of the position, the individual's perception of

personal and work-related situations may be a contributing factor to white collar offending. The importance of situational factors on behavior has been pointed out by researchers in sociological, psychological, and other perspectives. Epstein (as cited in Zucker, Aronoff, & Rabin, 1984) stated:

> There is ample evidence that behavior is highly sensitive to variations in situational cues. Every experiment that demonstrates a significant effect as the result of the manipulation of a variable provides evidence that behavior is responsive to situational cues (p. 219).

Implicit in this statement is an assumption that social behaviors are functionally adaptive. But this does not mean that every action or situational response is the most sensible one available. In the case of the white collar offender, however, maximizing outcomes, including cheating and other criminal behaviors for one's self is crucial to success. "For human behavior to be adaptive and for learning to occur, it is obviously necessary for behavior to be responsive to situational demands" (Epstein, cited in Zucker et al., 1984, p. 219). Epstein has also noted that behavior is to some extent situationally specific and to

some extent general across different situations.

One way in which individuals view personal as well as work-related environments can be assessed through self-described behavior and attitudes in past personal and work situations. The Employment Inventory (Paajanen, 1988) measures these dimensions.

To summarize, I/O psychologists have been successfully making predictions for personnel purposes ever since 1941 when the first large-scale employee selection and placement test (the Army General Classification Test) was developed. In making such predictions, psychologists often apply the psychological principles and facts from many theories. While some researchers (e.g., Hirschi & Gottfredson, 1988) propose one general theory of crime (to explain *causation* for all crimes), the *prediction* model of the present study will adopt a complementary approach. This multifaceted approach will consider dispositional indicators, past behaviors, and perceptions of personal and work-related situations. An assumption of situational opportunity for white collar criminality is made for both groups. It is believed that white collar criminality can best be understood by viewing it from the individual level (e.g., personality) and from within an historical, sociocultural context. Components of personality such as motivations for

power and achievement are thought to be fostered in childhood by parents, but the way in which these motivations are directed are fostered throughout the lifespan by the social culture within which we live. Murray (1938) believed that personality is longtitudinal in nature and that it is constructed out of all the events occurring over the course of an individual's life. Research in recent years has clearly demonstrated the stability of personality across the lifespan (e.g., Block, 1971; Funder, Block & Block, 1983; McCrae & Costa, 1984; Caspi, 1987; Funder & Block, 1989; Shedler & Block, 1990.) A multifactor psychosociological approach would incorporate the psychological orientation of individual differences into a sociological framework that emphasizes social causative factors. For example, social conditions and attitudes that encourage competition, materialism, personal responsibility and freedom of choice are seen as fostering individualism (Spence, 1985). The success-oriented attitude of the United States is reflected at a global level in the competitive industrial and organizational environment of the marketplace. At an individualistic level, the Puritan or Protestant work ethic encourages achievement and success. Meanwhile, the Darwinian view that competition is the natural state of humans in a

struggle for survival can explain self-interest and achievement motivation. The unscrupulous competition and destructive aspect of white collar criminality are shaped by the characteristics of the individual as well as by society at various life stages. Thus, the prediction of criminality cannot be attributed singly to primacy effects (e.g., parents) or recency effects (the culture of the work environment) or to individual characteristics. The idea that the criminal response is a multifaceted phenomenon is not new; an individual's behavior is a reflection of individual characteristics, past experiences, and the perception of the existing situation. The study empirically evaluated these dimensions for a specific type of criminal behavior -- white collar criminality.

Statistical Analyses

The technique of discriminant analysis required four independent but related levels of statistical procedures. In the first level, variables were selected for the prediction model, and in the second level the prediction model was developed. In the third and fourth levels, a classification analysis (of individuals into groups) was performed and, lastly, the data were cross-validated to test the stability of the prediction function.

Level One: Selection of Variables. The purpose of the

first level of analysis was to empirically and conceptually reduce the variables, or scales, of the instruments to a number fewer than the original 49 while simultaneously retaining those variables having the most discriminating power between the criterion offender/non-offender groups. The following several steps were involved in the selection of variables for the prediction model.

Six variables were identified apriori for possible inclusion in the final model: (RE)Responsibility, (SO)Socialization, (NAR)Narcissism, (Perform)Performance, (SC)Self-control, and Sibling rivalry. These conceptually derived variables were evaluated throughout the variable selection process against those that were empirically driven. A large volume of literature has shown that the (RE)Responsibility and (SO)Socialization scales of the CPI are predictive of delinquent and other criminal behavior. While numerous case studies and studies using smaller samples have been conducted using the CPI and to a lesser extent the Employment Inventory, the predictive value of the scales has not been empirically tested for a group of white collar offenders such as in the present field study. Therefore, RE and SO were variables of interest that were considered for the prediction model. In addition, Narcissism, was selected for obvious reasons: implicit in

fraudulent and other white collar criminal behavior lies an assumption of self-interest. Narcissistic themes of the CPI Narcissism scale include inflated self-esteem, fantasies of power and brilliance, competiveness, entitlement and feelings of being above and beyond the dictates of ordinary social conventions, dissatisfaction with current status, and feelings of underappreciation (Wink & Gough, 1990). The Performance scale was identified as another possible variable because of its established reliability and validity in predicting counterproductive behavior (Paajanen, 1988), and Sibling rivalry from the Biodata Questionnaire was selected to be examined in conjunction with the other analyses because it identifies attitudes of competition at a young age, and it is known that stability of some behaviors and personality traits exist across time (Epstein, 1984). Lastly, (SC) Self-control was considered. A low score on the CPI SC scale indicates, among other things, selfishness and self-centeredness. The above variables were to be included in the model if there was also empirical support in the form of significant mean differences.

Responses to items of the instruments resulted in composite scores on 49 scales over all of the instruments. The F/M Scale of the California Psychological Inventory (CPI) was not used in the study because of a wide range of

differences in standard scores between males and females. According to the Profile Sheet for the CPI, a raw score of 10 is equivalent to a standard score of 40 and 18 for males and females, respectively (Consulting Psychologists Press, Inc., 1987). Although standard scores were not available for the B-MS (Baucom unipolar scale for masculinity) or for the B-FM (Baucom unipolar scale for femininity), these CPI scales were also eliminated for further consideration because of possible standard score differences such as in the F/M Scale. In addition, the three Vector scales of the CPI (V1, V2, V3) were omitted because they are higher order scales under which are subsumed other CPI scales. Thus, 43 of the 49 initial scales (or variables) were used for the purposes of the present study.

T-test analyses were conducted on the means of the 43 variables to assess significant mean differences between offender/non-offender groups. Klecka (1990) has noted that variables that do not show significant group differences at the univariate level usually do poorly in a discriminant analysis. Variables significant at $p < .01$, or less, were considered for further analysis.

Stepdisc (SAS, Edition 6.03) Stepwise and Forward analysis were conducted, and a comparison was made of the summary table of extracted variables for the two methods. For both methods, variables that showed significant partial

R-squared values were selected for further consideration. In both cases, the SAS default significance level of $p < .15$ was the criterion for entry of the variable. Forward selection begins with no variables in the model and at each step the variable that adds the most discriminatory power is entered, as long at the criterion level is met. Stepwise is similar to Forward in that the process begins with no variables in the model. At each step, however, the model is examined and variables that contribute the least are removed. If a same variable had been selected by both methods, it was targeted as a possible variable for the prediction model.

The variables selected by comparison in the Stepdisc procedures were subsequently compared against those derived from the t-test, and an examination of the Stepdisc correlation matrix was made to identify high and low correlated variables. Variables selected by comparison that also showed significant mean differences on the t-tests were selected, and the remaining variables were eliminated.

Thus, the variables were selected for the development of a discriminant function that was subsequently used for the classification of individuals into groups and, finally, for the cross-validation of the function.

Level Two: The Prediction Model. The total sample of

677 was divided into two groups for purposes of developing the prediction model and for the cross - validation. After deletions for missing observations on scale items, approximately two-thirds of the sample, or 435 individuals, comprised the developmental sample; there were 216 non-offenders, and 219 offenders. The remaining one-third, or 214, represented members of the holdout (cross-validation) sample (including 104 non-offenders, and 110 offenders). Each sample (developmental and holdout), therefore, consisted of approximately equal numbers of offenders and non-offenders.

CANONICAL, an option of the DISCRIM Procedure (SAS, 1990) was specified to produce the linear coefficients of the discriminant functions. Since the non-offender and offender groups were unequal in size (non-offenders = 216 and offenders = 219), proportional probabilities of group membership were used as the prior probabilities for classification. The discriminant function was, therefore, based on prior probabilities approximating .50.

Discriminant analysis, a correlational technique developed by Fisher (1936), is a commonly used method of analysis for exploratory purposes in which differences between two or more groups of objects are examined with respect to several variables simultaneously. The DISCRIM CANONICAL Procedure (SAS, 1990) computes the probability of

group membership ($P(G_i/R_j)$ by applying Bayes' Theorem:

$$P(G_i/R_j) = \frac{P(R_j/G_i)P(G_i)}{P(R_j)},$$

where $P(R_j/G_i)$ is the probability of a response given group membership, and $P(G_i)$ is the probability of group membership (or base rate). In the present case, two categorical groups comprised the dichotomous criterion variable: white collar employees in positions of authority, and white collar employees who were incarcerated in U. S. Federal Prisons for white collar crimes. For purposes of the statistical procedure, white collar employees in positions of authority, or non-offenders, were coded "1," and incarcerated white collar offenders were coded "2." The independent or predictor variables were the scales of the California Psychological Inventory (CPI), the Employment Inventory (EI), the Biodata Questionnaire (BQ), the Irritability Scale, and the Probscore measure of risk perception. Probably the most frequent applications of discriminant analysis are for predictive purposes, that is, for situations in which it is necessary or desirable to classify subjects into groups or categories (Betz, 1987). The discriminant analysis produces mathematical equations called discriminant functions that, when applied to predictors such as the variables in this study, maximize

variance between groups while minimizing within-group variances. Thus, the variables are used to maximally differentiate between the groups and the discriminant function is used to predict group membership.

In Level Two: The Prediction Model, two statistical procedures were performed by which interpretations of the meanings behind the variables can be made. First, canonical discriminant coefficients associated with each of the variables of the equation were derived to indicate the relative importance of each variable in determining a discriminant score. Such coefficients are sometimes called weights. Standardized discriminant coefficients are created by multiplying the raw canonical discriminant coefficient for each variable by the standard deviation for the variable. To calculate a total discriminant score for an individual, the original score on each variable in the model must first be standardized before it is multiplied by the standardized coefficient for that variable. This calculation is made for each variable in the model. A sum of the standardized coefficient/standardized score products is the discriminant score. Symbolically,

$$D_1 = X_{11}(w_{11}) + X_{21}(w_{21}) + \ldots\ldots\ldots X_{n1}(w_{n1}),$$

D_1 = discriminant score for person one

X_{11} = variable one, person one

w_{11} = weight for variable one, for person one

The standardized coefficients (weights) are useful in determining which variables contribute most to the discriminant score. By examining the relative magnitudes of the variables (ignoring the sign), the independent importance of each variable to the function can be evaluated.

The limitation of the usefulness of using canonical coefficients to interpret the meaning of the function is that some variables may be correlated and, therefore, share the same discriminating information. That is, they may share a joint contribution to the discriminant score. For example, one variable may make a small positive contribution to a discriminant score while another variable may make a large negative contribution. If these two variables are highly correlated, it is their net combined effect that represents the true effect upon the score. Therefore, it is important to emphasize that inherent in the standardized canonical coefficient are the simultaneous contributions of the other variables in the function. Thus, the canonical coefficients (weights) in combination with the structure coefficients, the significant mean differences on the independent variables, and overall group means are all considered in the interpretation of the variables of the function.

The second discriminant analysis procedure is the derivation of the second set of coefficients, the structure coefficients. While the standardized canonical discriminant coefficients, or weights, provide an index of the variable's contribution in calculating the discriminant score, structure cofficients aid in interpretation by providing a measure of the degree to which each variable is related to the function as a whole. That is, structure coefficients are correlations between a single variable and the discriminant function. They are similar to factor loadings (Huberty, 1975) in that they reflect the shared variance between a variable and its underlying composite. When the coefficient for a variable is near + 1.0, the function is carrying nearly the same information as is the variable, and when the structure coefficient is near zero, the variable and the function have little in common. If variables having high loadings (i.e., structure coefficients) also have similar characteristics, the function can be named after the characteristics. The total structure coefficients yield unique information regarding the structure of the discriminant function and carry information that discriminates between groups. While the signs of the canonical coefficients do not meaningfully aid in the interpretation of the meaning of the variables to the function, the signs (and sizes) of the structure

coefficients can be used to predict group membership. In this study, negative correlations are associated with offenders (coded "2"), and positive correlations are associated with non-offenders (coded "1").

Therefore, the discriminant coefficients and the of structure coefficients provide different information by which the discriminant function is evaluated. Each of these two procedures were performed for the discriminant analysis of the data in the present study.

A test of the significance of the function as a whole was performed. Wilkes' lambda, a multivariate measure of group differences over the discriminating variables, was applied to test the significance of the selection function. Wilks' lambda is the ratio of within-groups variance to total variance, and the percentage of variance in the discriminant scores not explained by group membership. Values of lambda that are near zero denote high discrimination. As values approach the maximum value of 1.0, lambda is reporting increasingly less discrimination. Lambda was transformed into an F distribution for testing the hypothesis that the group means are equal.

Univariate F-tests were calculated to assess the significant contributions of the independent variables in predicting group membership. Significant univariate F-tests indicate that the variables of the model

independently contribute to differentiating the groups. If the variables in the model are interrelated, one variable may have received the most weight, while another may have received little weight. Significance tests of the independent variables in this study do not, therefore, provide an unambiguous interpretation but simply provide an index of the possible significant contribution for each variable.

Effect sizes (mean differences in units of standard deviations) in the form of d values were calculated for all variables in the study.

In summary, in Level two where the prediction model was developed, the discriminant function was presented, analyses of canonical discriminant coefficients and total structure coefficients were performed, and tests of significance for the function as a whole as well as for the independent variables were conducted.

The next step in the discriminant analysis process utilized the selection function in the classification analysis (of individuals into non-offender or offender groups).

Level Three: The Classification Analysis. In the classification analysis, the discriminant function that was developed in Level one, was used to identify the group that an individual most closely resembles (i.e., the

probability of belonging to the non-offender vs. offender group given a particular score, $P(G_i/R_j))$, according to Bayes' Theorem. Schmidt (1974) has pointed out a common error that occurs in classification analyses in which the efficiency of prediction is stated as the probability of a score (e.g., score derived from applying the discriminant function) given the individual is a member of a particular group ($P(R_j/G_i)$. Schmidt points out how these two probabilities are related by means of Bayes' Theorem:

$$P(G_i/R_j) = \frac{P(R_j/G_i)P(G_i)}{P(R_j)},$$

where $P(R_j/G_i)$ is the probability of the response given group membership, and $P(G_i)$ is the probability of group membership (or base rate). Discriminant analysis applies Bayes' Theorem to the classification of an individual to group membership. The following four criteria are required for the classification analysis: the individual's score on the discriminant function, the mean of the discriminant scores within each group (called the group centroid), information regarding base rates (also called prior probabilities or unconditional probabilities), and posterior probabilities.

"D", the first of the four criteria, is the individual's score on the discriminant functions. "D" was described in

the previous section.

"$\bar{D}$", the second of the four criteria, is the group centroid. Group centroids are the means of discriminant scores within a group. In the present study there are two group centroids: one for the non-offender group, and the other for the offender group. Group centroids are calculated by multiplying the standardized group means of each variable by the standardized discriminant coefficient or weight for that variable. D is the sum of all standardized group mean/standardized discriminant coefficient products where, symbolically,

$\bar{D}_1 = X_{11}(w_{11}) + X_{22}(w_{22}) + \ldots X_{nn}(w_{nn})$, and

$\bar{D}_1$ = the group centroid for group one (in this case the non-offender group

X_{11} = the standardized mean for variable one for group one

w_{11} = the standardized weight for variable one for group one.

With an approximate 50% base rate, the group centroid ($\bar{D}$) to which the individual's discriminant score (D) is the closest is the predicted group of membership for that individual. A group centroid was calculated for each of the two groups.

The statistical procedure DISCRIM uses base rates, or prior probabilities, to yield the posterior probability of

group membership, that is, the probability of group membership for an individual given a discriminant score (D). For example, if the groups are of equal size (i.e., prior probability for each group is equal to .50), the percentage of correct classifications based on chance alone is equal to 1/k, where k equals the number of groups. In the developmental sample, there were 216 non-offenders and 219 offenders. According to the 1/k formula, the chances of correct classifications, without using a discriminant function, are approximately 50%. A classification table was developed for ease in interpreting the classification of individuals using the discriminant function.

In summary, in the classification analysis of level three, group centroids were calculated, a classification of individuals to groups (non-offender or offender) was performed, and a classification table was developed to show the numbers and percentages of those who were correctly and incorrectly classified.

Level Four: Cross-validation. Related to the probability of correct or incorrect classification is cross-validation. Betz (1987) has stated, "It is essential to note that cross-validation is absolutely necessary if the investigator wishes to apply the function to the prediction of group membership in subsequent samples of

individuals" (p. 396). Cross-validation is a statistical technique that estimates the usefulness of the discriminant coefficients that were developed on the study sample by applying the same coefficients to a second sample of individuals. The reason for the emphasis in cross-validation of discriminant analytic results is that results of the analysis may be overestimates when the function is developed on the same individuals who are then subsequently classified by that function. This results in biased estimates of classifications. Unbiased estimates of the stability of the discriminant coefficients were calculated using the method of cross-validation. The results in the cross-validation provided an unbiased indication of the usefulness of the function.

For purposes of the cross-validation analysis, the subjects were randomly divided into two groups. There is no established rule for the dividing of subjects into sub-samples. Some researchers divide the subjects equally into two groups, others prefer a larger developmental sample. In this case, it was decided that using the larger sample in the developmental stage may produce more stable canonical discriminant coefficients, or weights. Two thirds of the subjects (451) comprised the study sample, and the remaining one third (226) were the cross-validation sample. Therefore, all of the analyses up to the level

four cross-validation (including the preliminary statistics involving the identification of significant mean differences, the Stepdisc procedures, the development of the selection function and the classification of individuals) were conducted using the two-third sample only. Of the 451 subjects in the two thirds or developmental sample, 16 subjects were eliminated because of missing observations. Of the remaining 435 subjects, 216 were non-offenders and 219 were offenders. In the one third or cross-validation sample, 12 subjects were eliminated because of missing observations. Of the 214 remaining subjects, 104 were non-offenders and 110 were offenders.

In the cross-validation analysis, the 214 individuals in the one third sample were classified using the discriminant function that was developed on the 435 individuals. A classification table was developed to show the numbers and percents of correct and incorrect classifications for this one third group.

The last step in the discriminant analysis procedure is testing the function for shrinkage. The issue of shrinkage can be described and discussed in two separate but related ways. In the first case, shrinkage can be viewed as the difference between the total percent correct classifications in the developmental sample and the total

percent correct classifications in the cross-validation sample. This index of shrinkage is specific to the particular base rate, and is different for different base rates. Given a small shrinkage, the weighted coefficients of the function are considered stable (and can, therefore, be applied to new samples). In the second case, shrinkage is construed as a proportion reduction of an absolute difference between the developmental sample and the base rate of the developmental sample and the cross-validation sample and the base rate of the cross-validation sample. In this latter context, shrinkage is an estimate of the loss of predictive utility (when base rates are considered).

In summary, in the Level Four: Cross-validation procedure, the cross-validation analysis was performed, and estimates of shrinkage were calculated to determine 1) the stability of the function, and 2) the loss in predictive utility under base rate conditions.

Results

Level One: Selection of Variables. Table 8 presents the means, standard deviations, t-test levels of significance, and coefficient alpha reliabilities for the 43 scales of the five instruments used in the study. As was previously noted, the *d* value estimations of effect sizes are listed in Table 6. As Table 8 shows, the means of 30 of the 43

variables for non-offenders and offenders are significantly different. The largest mean differences were seen on the following 20 variables: (RE)Responsibility, (SO)Socialization, (SC)Self-control, (CM)Communality, (TO)Tolerance, (AC)Achievement via Conformance, (AI)Achievement via Independence, (MP)Managerial Potential, (WO)Work Orientation, and (NAR)Narcissism (CPI scales); Probscor(Probability of risk); (Perform)Performance, Tenure, Franknes, Infrequency (Employment Inventory scales); and Scientific interest, Socioeconomic status, Extra-curricular activity, Independence-dominance, and Social extroversion (General BQ scales).

The Forward selection entered 20 variables. The Stepwise procedure entered the same 20 variables, and no variables were removed. Table 9 presents the levels of significance and the variables that were entered for both methods.

The following six variables that entered the Stepdisc procedure were eliminated from further consideration because the partial R-squared F-statistics were nonsignificant, and they did not add incrementally to the average squared correlation: Academic achievement, Scientific interest, (AI)Achievement via Conformance, Athletic involvement, (AI)Achievement via Independence, and

(CM)Communality.

Although (GI)Good impression, (SP)Social presence, and (IE)Intellectual efficiency entered the Stepdisc summary, these variables were eliminated from the selection process because they did not meet the criterion of significant mean differences, and had not been targeted apriori for possible selection.

An inspection of the correlation matrix of the 20 Stepdisc variables showed low correlations between Frankness and the other variables, ranging from .04 (Narcissism) to .34 (Performance). Since the Frankness scale is a lie scale showing significant mean differences between groups [$\underline{t}(434) = 7.90$, $\underline{p} < .001$; $\underline{d} = .76$], it was decided to include this variable in the model.

Although (WO)Work orientation did not enter on the Stepdisc procedures, it showed significantly different means [$\underline{t}(43) = 5.41$, $\underline{p} < .0001$; $\underline{d} = .52$]. WO is a measure of reliability, dependability, a sense of dedication to work, and a measure of the strength of the work ethic. In general, it appears to be a measure of conscientiousness.

Neither (SC)Self-control nor (NAR)Narcissism were selected on Stepdisc although both met the mean difference and apriori criteria for selection; for the reasons previously stated, it was decided to include both SC and NAR in the model. Thus, 15 variables were selected as the

prediction model for the discriminant analysis.

In summary, 49 variables (or scales) were reduced to 15. These were the variables that were used to derive the selection function, for the classification analysis, and for the cross-validation procedure.

Level Two: The Prediction Model The 15 discriminating variables of the function, their means and standard deviations are presented in Table 10, and Table 11 displays the correlation matrix. The d values for the variables and development and hold-out samples are listed in Table 6.

Canonical discriminant analysis produced the following discriminant function:

D = .628(Perform) - .387(Extra-curricular -
.322(Probscor) + .202(Sibling rivalry) +
.614(Socialization) - .283 Academic interest +
.352(Responsibility) + .210(Tolerance) -
.249(Anxiety) -.168(Social extraversion) +
.173(Franknes) + .086(Work orientation) -
.542(Well-being) - .300(Self-control) +
.053(Narcissism).

The standardized canonical discriminant coefficients (C) and the total structure coefficients (B) are listed in Table 12.

An examination of the canonical discriminant

coefficients show the largest weights for Performarce (.628) and Socialization (.614), and the smallest were .053 for Narcissism, .086 Work Orientation, and -.168 on the Social extraversion scale.

Overall, the most dominant variables in the model ar: the Performance scale of the Employment Inventory, and the Socialization and Well-being (-.542) scales of the CPI. The next five largest contributors are Extra-curricular (-.387), Responsibility (.351), Probscor (-.322), and Self-control (-.300). The weights of the remaining ten variables (Sibling rivalry, Tolerance, Anxiety, Social extraversion, Frankness, Work orientation, and Narcissism) range from .210(Tolerance) to .053(Narcissism), indicating contributions of lesser amounts for these variables to the function for determining the discriminant score.

The structure coefficients presented in Table 12 are the correlations between the functions and the original variables (Tatsuoka, 1988). The highest structure coefficient (.78) was for the Performance scale of the Employment Inventory, and the lowest was .14 for Well-being. This means that the function is carrying much the same information as is represented by the Performance scale, and that the Well-being scale has little in common with the function. Furthermore, the positive correlation that is associated with non-offenders (coded

"1") indicates that these scales predict non-offender group membership (whereas a negative correlation is associated with offender status, coded "2"). Six variables carrying independent but similar moderate correlations (with the function) include Extra-curricular (-.53), Socialization (.57), Responsibility (.50), Tolerance (.53) Social extraversion (-.48), and Frankness (.45). These correlations indicate moderate relationships between each variable and the function. Of these six, Extra-curricular and Social extraversion carry negative signs indicating that these variables predict offender group membership. Other variables having moderate to moderately-low correlations with the function are: Probscor (-.41), Sibling rivalry (.22), Anxiety (-.22), Self-control (.23), Work orientation (.32), and Narcissism (-.39). Low correlations, indicating little independent variable commonality with the function as a whole, were seen for Academic interest (-.19) and Well-being (.14).

An examination of Table 11 shows that the range of correlations for four of the five most dominant variables (Performance, SO, RE, TO) are from .55 (Perform and RE) to .72 (SO and RE). The fourth most dominant scale, Extra-curricular activity shows low and negative correlations with the other five scales.

The Performance scale/CPI correlations ranged from -.22

(Anxiety) to -.58 Narcissism.

The Frankness scale correlates negative and low with all of the scales, ranging from .04 (Narcissism) to -.31 (Extra-curricular).

Probscor also shows low and negative correlations with the other scales in the model, ranging from -.02 (Sibling rivalry) to .18 (Extra-curricular).

Both of the General Biodata scales in the model (Social extraversion and Extra-curricular), while moderately correlating with each other and with Academic Interest, show low correlations with the remaining scales, ranging from -.02 (Social extraversion and (SC)Self-control) to -.31 (Extra-curricular and Frankness).

The above correlational summary reveals that the Performance and Frankness scales share common information, and Probscor and the two GBQ scales each carry independent information (relative to the other scales in the model).

D values of .50 or greater were found on the following 14 scales: (RE)Responsibility, (SO)Socialization), CM(Communality), TO(Tolerance), AI(Achievement via independence), NAR(Narcissism), Probscor(Probability of risk), Perform(Performance), Tenure, Frankness, Scientific interest, Extra-curricular activity, Independence-dominance, and Social extroversion (see Table 6).

Independent univariate F-tests (Table 14), indicating

independent contribution of variables to the function, showed the following 11 variables to be significant at $p < .0001$: Performance, Extra-curricular, Probscor, Socialization, Responsibility, Tolerance, Social extraversion, Frankness, Work orientation, Self-control, and Narcissism (Table 14). Three of the 15 variables were significant at $p < .01$ (sibling rivalry, Acadamic interest, and Anxiety); and Well-being was significant at $p < .05$.

CANONICAL results showed the overall function to be statistically significant. The value of Wilks' lambda for the function calculated was .38, distributed as $F(15, 419) = 46.54$, $p < .0001$. This is interpretated as meaning that the null hypothesis that the group means (centroids) are equal can be rejected at the .0001 level. The degree of association between the discriminant scores and group membership (canonical correlation, or R_c), was .79; and the proportion of variation in the discriminant function explained by the groups (squared canonical correlation, or R_c^2), was .62 (Table 13). The d value was 2.57 (see Table 6).

Level Three: The Classification Analysis

Group centroids are the means of discriminant scores within a group. The group centroid to which the individual's discriminant score is the closest is the predicted group of membership for that individual (when the

base rates approximate 50% as in the present study). The group centroid for the offender and non-offender groups were -1.279 and 1.296, respectively. The plot of centroids for offenders (D_2) and non-offenders (D_1) is presented in Figure 1, p. 101b, and the frequency distributions for the discriminant scores for offenders and non-offenders are in Appendices N and O. The discriminant function correctly classified 89.35% of the non-offenders, and 10.65% were incorrectly classified as offenders. Of the offenders, 90.41% were correctly classified, and 9.59% were incorrectly classified as non-offenders. As shown in Figure 1, a discriminant score greater than zero will usually correctly classify an individual as a non-offender; and a discriminant score less than zero will usually correctly classify an individual as an offender. The point of maximal differentiation, or the point where two curves cross, is the zero point on the scale. This is the cutting score.

The classification percentages and numbers for the developmental sample are presented in Table 15. Correct classification across both groups was 89.88% This high percentage of correct classifications reflects the canonical discriminant correlation of .79, since the classification was performed with the canonical discriminant function. Overall, there were 44

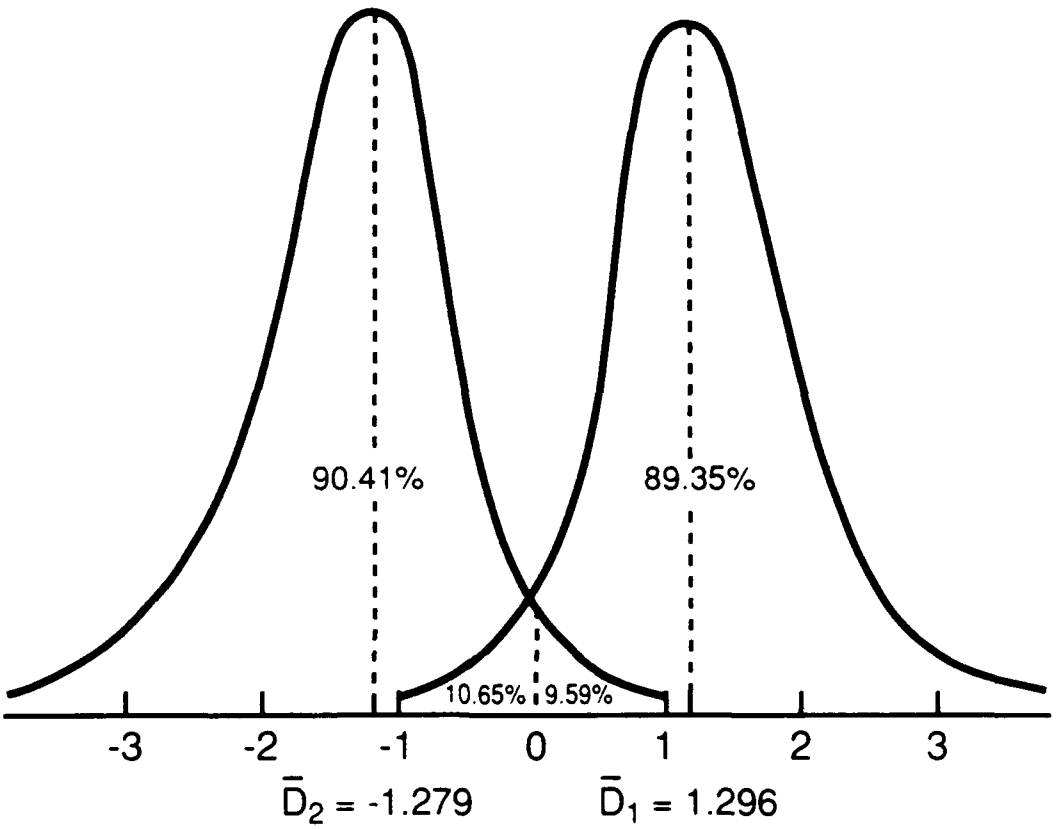

Figure 1. Plot of centroids for offenders (2) and non-offenders (1).

misclassifications, including the misclassification of 23 non-offenders (as offenders), and 21 of the offenders were classified as non-offenders.

The actual percentage of correct predictions were compared statistically to that expected on the basis of chance by using the *z*-test for the difference between proportions (Huberty, 1984, p. 166). According to the classification results in Table 15, the percent of correct classifications (actual hits) was 90% [(193 + 198)/435]. Given the marginal proportions, however, the expected classifications (expected hits) are: 106 non-offenders classified as non-offenders [(214/435)(216)]; 110 non-offenders classified as offenders (216-106); 108 offenders classified as non-offenders (214-106); and 111 offenders classified as offenders. The percent of expected hits is, therefore, (106 + 111)/435, or (214/435)(prior .497) + (221/435)(prior .503), or 50%. While the expected hits are 50%, the actual hits were 90%. A two-sample test of proportions showed the difference to be significant (z=16.76, $p < .0001$). Tables 16 and 17 present the observed and expected classification tables, and the *z*-test for significance is presented on Table 17.

Level Four: Cross-validation. The unbiased estimates of the stability of the discriminant function are presented in the cross-validation classification Table 18. The d

value for the cross-validation sample was 1.97 (see Table 6). As is shown in Table 18, 87.50% of the non-offenders were correctly classified, and 12.50% were misclassified into the offender group. This is to be contrasted with the correct (89.35%) and incorrect (10.65) classifications for non-offenders in the developmental sample. In the cross-validation for the offender group, there were 81.82% correct classifications and 18.18% misclassifications, compared with 90.41% correct and 9.59% incorrect in the developmental sample classifications. The total error rate of misclassification for the cross-validation group was 15.36% versus 10.11% for the developmental sample. (Total error rate is calculated by summing the misclassifications for each group, then dividing by 2.)

Two estimates of shrinkage were calculated. In the first case, shrinkage was calculated as 5.31% (89.89% of total correct classifications for the developmental sample, minus 84.58% correct classifications for the cross-validation sample). While 84.58% is not as accurate as 89.89% in classifying individuals, the shrinkage of only 5.31% indicates that the weights for the ceofficients are stable and can be used to predict to other samples. But when prior probabilities are considered, shrinkage is 13.2%. This is an unbiased estimate of the loss of predictive utility in the discriminant function with base

rates approximating 50% (i.e., 89.89% - 50% = 39.9% for the developmental sample, and 84.58% - 50% = 34.6% for the hold-out sample; 39.9 - 34.6% = 5.3%, and 5.3%/39.9% = 13.2 %).

Discussion

The canonical structure coefficients (Table 12) are used to "name" a function. By noting the variables having the highest coefficients (or loadings), and similar characteristics, the model is named after those characteristics, a process parallel to factor analysis. An examination of the total canonical structure revealed that the highest loadings were on five scales, but properties in common were seen between the 15 scales of the model.

The five dominant coefficients were for Performance, (SO)Socialization, (TO)Tolerance, (RE)Responsibility, and Extra-curricular activity. Non-offenders, relative to offenders, scored higher, on average, on all but Extra-curricular activity.

The largest loading was on the Performance scale of the Employment Inventory; SO, TO, and RE are all California Psychological Inventory scales, and Extra-curricular activity is a General Biodata scale. Performance, SO, RE, and TO all share a common thread. Individuals who score high on Performance are predicted to be dependable, reliable, responsible, motivated to overall performance on

the job, and are rule-abiding and conscientious in their work behavior (Paajanen, 1988). It is not surprising that Performance shows moderately high correlations with the SO, RE, and TO California Psychological Inventory scales, for the scales of the CPI (and other personality inventories) guided the composition of Employment Inventory test items (Johnson, 1990). In writing the test items, some were written in parallel to existing scale items, for there is a limited range of ways to ask some specific questions (Paajanen, 1988).

The SO scale is a measure of integrity and was designed to measure on a continuum the degree to which social norms are adhered. Individuals who score high on SO are dependable, honest, conscientious, rule-abiding, and are not inclined to be opportunistic or manipulative (Gough, 1990).

The RE scale shares some common characteristics with SO. RE assesses to what degree persons are conscientious, responsible, dependable, and have a commitment to social, civic, or moral values. Persons who score low on this scale express antisocial behavior, and, in occupational groups, higher scores predict responsibility and attention to duty (McAllister, 1988).

TO identifies permissive, accepting, and non-judgmental social beliefs and attitudes. Persons scoring high on TO

are tolerant and trusting, whereas low scorers tend to be suspicious, are more judgmental of others, and do not like to rely on others for their success.

The common theme running through the above four scales is conscientiousness and attitudes toward prosocial activities. If one were to name the function at this point it would be called "conscientiousness," for the dimensions of the scales run parallel to and/or are descriptively associated with the facets of the global construct "conscientiousness" as described by Digman (1990), Peabody (1987), McCrae & Costa (1985, 1987), Norman (1963), and others.

SC is associated with SO and RE in the following ways. It was developed to measure the degree of self-control and freedom from self-centeredness. The distinction among the three is that RE measures the degree to which controls are understood, SO measures the extent to which they influence the person's behavior, and SC measures the degree to which the person espouses the self-control behavior (Megargee, 1972). The mean scores on all of the above scales Performance, (SO)Socialization, (RE)Responsibility, (TO)Tolerance, (WO)Work Orientation, and (SC)Self-control were higher for non-offenders relative to offenders indicating greater tendencies toward those dimensions.

In the aggregate, low scores on the above scales

indicate behaviors that are undependable, irresponsible, self-centered, distrustful, risk-taking, norm resistant and over or under-controlled. Very low scores on RE indicate behavior that is irresponsible and self-centered, and these individuals may be in serious personal financial trouble (McAllister, 1988). Individuals who score low on the SO scale are usually risk-takers, and they are unethical. They lack integrity, are manipulative, and opportunistic. Low SC scorers are usually activity-oriented, and go with their hunches and intuition when it comes to decision-making. It is possible, then, that the individual who disregards rational processes of financial decision-making may also be those who score low on RE, indicating financial difficulties. These same types of individuals become bored with routine, and make good start-up types of managers (McAllister, 1988). Also, they are the predicted successful entrepreneurs, are adaptable, and have a zest for change (McAllister, 1988). The lower mean scores on the SC scale for the offender group is consistent with the offenders' mean score on Extra-curricular activity and Social extraversion - the two General Biodata scales.

Social extraversion is a measure of past social involvement. It measures the extent to which individuals have, in past situations, held personal friendships, were

considered popular with others, participated in and directed group activities, and were effective in social situations (Eberhardt & Muchinsky, 1982). Social extraversion and Extra-curricular activity are moderately correlated, but while social extraversion includes items that measure popularity and friendships, Extra-curricular activity includes items that measure leadership activities. Extra-curricular activity is a measure of involvement and participation in social activities. Questions on this past history scale ask for frequency of participation and leadership in various organizations, associations, and activities. (Items 60, 103, 110, 111, 112, and 116 comprise the Extra-curricular scale, Appendix Kb.)

Research with juvenile delinquents has shown that Extra-curricular activity as measured by the (SY)Sociability scale of the CPI discriminates offenders from non-offenders (Mizushima & Devos, 1967). Other researchers have not, however, found the same results (Richardson & Roebuck, 1965). SY is a measure of tendency to be sociable, rather than participative, which could explain these contradictory research findings. That is, the fact that one is sociable does not necessarily mean that the individual also actively participates. However, it seems that the two are related.

Extraversion has been shown to be a predictor of

managerial job success (Barrick & Mount, 1990). These researchers also showed that conscientiousness was a predictor of job success. In the present study, higher means scores on conscientiousness and lower mean scores on social extraversion and extra-curricular activity predicted non-criminal behavior for white collar employees (e.g., managerial level employees). And it is interesting that offender mean scores relative to non-offenders were higher on the CPI scale, (MP)Managerial Potential. Gough (1987) has pointed out that the scales cannot be interpreted in isolation. That is, low (or high) scores on one scale are expected to be consistent with and reflect low (or high) scores on another scale. In the case of the white collar offender whose average scores were higher on Extra-curricular and Social extraversion, lower mean scores were concurrently seen on the (SC)Self-control scale. It is, therefore, reasonable to suggest that individuals who lack control of self and who are also socially extraverted would also become involved in extra-curricular activities. For the white collar offender, the types of extra-curricular activities could lead to the criminal behavior (e.g., if the cost of the activity is outside of the financial range of the participant), or the activity could be the criminal activity itself, or both.

An examination of the remaining 11 scales revealed interrelationships among them along several dimensions. For example, (WO)Work Orientation and (SC)Self-control, which showed moderate loadings, could be subsumed under a global conscientiousness construct. High scores on WO suggest persons who are reliable and dependable. In addition, WO measures a sense of dedication to work and the work ethic, and the likelihood of performing well (McAllister, 1988).

Related to this discussion is the self-centeredness dimension that was previously reported in low (SC)Self-control scores. Self-centeredness was also seen in low (WO) scores, and it is also measured by the Narcissism scale. Perloff (1987) has pointed out that self-interest, when seen with personal responsibility, is an effective tool for contributing to the public good and that when self-interest is paramount, detriments to the public good occur. In the present case, it has been shown that self-interest as measured by Narcissism (and SC and WO) is elevated for white collar offenders, and conscientiousness as measured by the (RE)Responsibility scale is lower, relative to non-offenders. A number of meanings that are inferred from the Narcissism scale include inflated self-esteem, need for attention, and the

propensity to be a risk-taker (Wink & Gough, 1990). Other researchers have noted that hedonism, related to narcissism, is seen on the low end of the conscientiousness continuum (Costa, Busch, Zonderman, & McCrae, 1986). In a study of the basic dimensions of personality, the risk-taking dimension loaded on a single factor along with (SC)Self-control, (RE)Responsibility, and (SO)Socialization (Zuckerman, Kulhman, & Camac, 1988). Narcissim, in addition, also measures competitiveness. And perceptions of risk were also seen on the higher mean Probscors. Risk-taking, it may be recalled, is also seen on lower Performance scores and, again, offenders relative to non-offenders scored lower on *Performance.* Since high scores on Narcissism measure competitiveness, and Sibling rivalry measures competitiveness as well, it would seem that offender mean scores in the same direction would be seen on both scales. This was not the case. Offenders scored, on average, higher on Narcissism and lower on Sibling rivalry, relative to non-offenders. Wink and Gough (1990) have been careful to point out that it is not an easy task to measure by self-reports the contradictory attitudes toward the self that is seen in narcissistic personalities. These scholars conclude, however, that it does seem possible to identify via self-report items those persons in whom the critical

components of narcissism are present. It is possible that the competitive element that is tapped by the Naricissism scale is overshadowed by other dimensions (e.g., self-interest), which could explain the different directions in mean scores for offenders on Narcissism vs. Sibling rivalry, or that white collar offenders are not as competitive as non-offenders.

In contrast to the other scales, (WB)Well-being reflects satisfaction with life situation. Needless to say, one would expect higher mean scores for non-offenders who are not confined to prison and this is, of course, what was found. Non-offenders scored higher on WB, relative to offenders. The effect size, however, was only .23. Low scores on the WB scale are also indicative of anxiety and, consistently, non-offenders scored lower on the Anxiety scale. It would be expected that offenders would show lower well-being and higher anxiety. It has been shown, however, that white collar offenders generally do not have difficulties in adapting to the prison setting. Benson and Cullen (1988) have pointed out that, despite the wide acceptance of the view that white collar offenders are thought to be especially sensitive to imprisonment, the contrary is true. Research on adjustment to prison life suggests that white collar offenders possess personalities

and social resources sufficient to enable them to cope with some forms of imprisonment. While they may not like the situation they have found themselves to be in, they have come to accept it. Benson (1985) also found that white collar offenders experienced little readjustment difficulties upon re-entering the community. It is, therefore, tempting to conclude that the responses to the WB and Anxiety scales are reflective of general behavioral tendencies, but caution must be exercised in such an interpretation.

Finally, Academic interest, a biodata measure of life history experiences relating to school, teachers, and interest in courses and homework, entered into the model. The higher mean scores for offenders, relative to non-offenders on this scale could reflect the elements of the academic environment that are also related to extra - curricular activity and social extraversion.

Several scales that did not enter into the discriminant function are meaningful to this discussion because they are measures of errors in responses. Nonsignificant mean differences were seen for the two groups on the fake-good scale ((GI)Good Impression). An inspection of the frequencies on the fake-bad and error scale, (CM)Communality, showed that 18 of the 216 offenders had

scores (27 or less) indicating these types of errors in responding. Scores of 20 or less on WB also indicates fake-bad responses, and of the 216 offenders, 15 scored below 20. Responses to the Infrequency scale of the Employment Inventory, measuring random responding or inability to read English, showed that 5 of the 216 inmates scored as high as "3" - the criterion for such errors. The non-offender average score was significantly higher than offenders on the Frankness scale, measuring greater candor and honesty.

In summary, there are 15 scales in the discriminant function. While this is not as parsimonious as one would like, each scale contributes empirically and meaningfully to the discriminating power of the function as a whole. While the scales measure responses on a continuum, the function classifies categorically. In naming the function, dimensions such as Performance, SO, Re, TO, and the remainder of the 15 scales may, when considered concurrently, form a behavioral disposition toward or away from white collar criminality. Mean scores were higher on the social/extraversion scales (social extraversion, extra-curricular activity, and academic interest). Lower mean offender scores, relative to non-offenders, on the remaining 12 scales showed tendencies toward

irresponsibility, undependability, dishonesty, self-interest, lack of self-control or discipline, willingness to take risks, and lesser work ethic attitudes -- all reflecting a lack of conscientious behavioral tendencies.

The most meaningful name for the function, under which is subsumed all 15 scales having associated characteristics, is "social conscientiousness." It is "social" because the behavior occurs in the social setting of the workplace, and because the negative behavior violates the norms of the social society. It is "conscientiousness" because, as a group, 12 of the scales measure personal values, behavioral control, sense of duty and responsibility, and risk-taking behavior. Scores at the low end of the SO continuum indicate a lack of conscientiousness in rule-abiding behavior, risk-taking and undependability. Risk-taking perceptions and attitudes toward behavior were reflected in the Probscor and Narcissism scales. Low RE scores suggest undependability as well as self-indulgence; scores at the low end of the Work Orientation continuum also indicate self-interest and unreliability, and self-interest was also tapped by Narcissism, as well as by low SC scores. Related to SC is the orientation toward activity (low SC scores) as well as disciplined/undisciplined and stable/unstable behaviors.

And Perform and Frankness predict conscientious, honest work behavior. Sixty-two percent of the variance in the "social conscientiousness" function was explained by the groups.

While the structure coefficients are used to interpret the overall meaning of the function, the size of the standardized canonical coefficients reveal the scales that contribute the most to the individual discriminant scores. Performance and (SO)Socialization were the high discriminators followed by (WB)Well-being (which measures dimensions common to SO). Extra-curricular, Probscor, (RE)Responsibility, and (SC)Self-control were the next dominant scales, with the remaining scales following in decreasing order according to coefficient size. Narcissism showed the least contribution to the score. While each scale independently contributed to the individual discriminant score, it is the function in its entirety that classified individuals as non-offenders or offenders.

The classification results for the developmental sample and the cross-validation sample were impressive in terms of the large d values, the amount of variance accounted for in the criterion variable by the discriminant function, and the subsequent high percentage of correct classifications. The combination of predictors in the discriminant function

successfully discriminated between offenders and non - offenders, and the results were stable in a new (hold-out) sample.

Base Rate Considerations. It was noted in an earlier section of this paper that the principle upon which discriminant analysis is built is Bayes' Theorem, which considers prior probabilities, or base rates, in the prediction of group membership. A number of researchers have drawn attention to the critical importance of considering alternative base rates in the selection developmental process (Schmidt, 1974; Rorer, Hoffman, LaForge & Shieh, 1966; Dawes, 1962). Rorer et al. have pointed out that while validation studies are usually conducted using groups of equal size, such as in the present case, disparate groups often exist in practice in which case different interpretations must be given the test results. That is, the probability of group membership given a particular score on a test will depend on the proportion of the groups in the population. The proportion of groups is also the base rate, or the prior probability of group membership. In the present study, the base rate was approximately 50%. There were 216 non-offenders and 219 offenders.

A concern in selection with respect to base rates is the

possibility of false negative and false positive errors. False positive error rates (incorrectly classifying an individual as unqualified, dishonest, etc.) have been used as an argument against the use of selection models when base rates are low (Ben-Shakhar, Lieblich, & Bar-Hillel, 1982; Cunningham, 1986; Lykken, 1974, 1981; Murphy, 1987, 1989). Other researchers have, however, presented evidence showing that, in the context of personnel selection, this reasoning does not hold (Martin & Terris, 1991). When selection ratios are entered into the decision-making process, even under conditions of low base rates, the use of valid selection instruments reduces both false positive and false negative errors. In the present study, false positive and false negative errors are presented in Figure 1 (p. 101b).

The scale in Figure 1 was transformed to illustrate the overlap of the two distributions by moving the zero point of the scale -2.57 standard deviations to the left of the group centroid for the non-offender group (recall that D_2 = -1.279 and D_1 = 1.296; and -1.279 -1.296 = -2.57). With a prior probability of approximately .50 and a cutting score of zero, 10.6% of the non-offender group were classified as offenders (false positives) versus 9.59% of the offenders who were classified as non-offenders (false

(false negatives), nearly equal misclassification errors.

While the importance of emphasizing base rates in classification procedures is critical, the selection ratio (i.e., the number of applicants and the number of job openings) determines the cut score, and the importance to the company of false negative and false positive errors must be determined. For example, suppose an organization hiring for a high-level security position decides that the selection of a conscientious, honest individual far outweighs the possibility of rejecting individuals who would not be offenders. In this case, the cut score should be set as high as possible given that all positions are filled. Alternatively, a low-level security position where loss due to crime is negligible may call for a lower cutting score in which case chances are greater for hiring a potential white collar criminal. Rauschenberger and Schmidt's (1986) statement that "The most productive workforce can be selected only by hiring from the top down...any other procedure will result in less productive employees" can be applied here. The most honest workforce can be selected only by hiring from the top down...by applying a high cut score to measures of conscientious behavior.

There are two major issues of concern with respect to

integrity and conscientiousness in the workplace: 1) there is the concern on the part of the employer of selecting applicants who are not predisposed to commit white collar (or other) crimes and, 2) there is the concern on the part of the applicant who expects the employer to be conscientious and fair in testing. Integrity, honesty, and conscientiousness in selection decision-making places demands on employers: this means using selection methods that have the highest validity because this is what minimizes both false positive and false negative errors.

Conclusions

Results of this research provide support for the existence of a global factor of social conscientiousness that predicts the propensity for white collar criminality. This global factor has dimensions of extraversion, reliability, dependability, risk-taking, narcissism, and ethical honesty that differentially predispose white collar employees away from or toward criminality. Biodata measures of extraversion and personality measures of conscientiousness were dominant in drawing this distinction.

An important point of emphasis is that personnel selection decisions in industry and government must be based on multiple criteria. The classification of

individuals based on a discriminant function such as that of the present study must be but a part of the overall hiring process. Other testing for knowledge, skills, and abilities, and structured interviews and reference checks are all part of the selection process. Further, base rates and cutting scores must be considered from the perspectives of both employer and applicant.

The goal of the present research was to extend the knowledge of offender vs. non-offender group differences in criminality for optimal decision-making in the hiring of white collar workers to positions of authority. A function was developed that is capable of making such a distinctions. Optimal utilization of human resources effecting the total economy and contributing to society for the good of all is possible through carefully constructed selection methods, and conscientious use of them.

STUDY THREE

Introduction

The findings in Study Two prompted further investigation and the addition of Study Three.

The sample of non-offenders and offenders remained the same, as did the instruments and the types of statistical analyses. The number of scales in the model was reduced from the 15 in Study Two, to six scales.

In Study Two, 49 scales were reduced to 15 scales that formed a discriminant function. Non-offenders and offenders were classified according to related concepts that were subsumed under two global constructs: extraversion and conscientiousness, and the function was named "social conscientiousness." The five dominant scales of the Chapter Two discriminant function were Perform, Extra-curricular, (SO)Socialization, (RE)Responsibility, and (TO)Tolerance. A sixth scale (SC)Self-control, though not so dominant as the others, also contributed to the classification. SC has been identified as a measure of conscientiousness, as has TO. SO and RE measures were also shown to be associated with the conscientious construct, and Extra-curricular activity was considered an expression of extraversion. Offenders scored lower than non-offenders, on average, on all scales except for Extra-

curricular, indicating lower behavioral tendencies on all five scales and higher propensity for extra-curricular activity.

Since five of the six scales were dominant (having the highest structure loadings) and have also been known to measure the conscientiousness construct, it was decided to perform a discriminant analysis on these scales, plus Extra-curricular activity, for a comparative analyses with the 15 scale model in Study Two.

Statistical Results

As was shown in Study Two, the social conscientiousness canonical correlation of Chapter Two was .79, the proportion of variance accounted for was .62, and the group centroids were -1.279 (offenders) and 1.296 (non-offenders) (Figure 1). Shrinkage in the cross-validation for Study Two was 5.3%; and, of the non-offenders, 89.35% were correctly classified while 90.41% of the offenders were correctly classified. In contrast, the results of the six scale model of Study Three are presented in Tables 19 and 20. Canonical results showed the overall function to be statistically significant (Table 19). The value of Wilks' lambda for the function was .46, distributed as $F(6, 428) = 82.44$, $p < .0001$. This is interpreted as meaning that the null hypothesis that the group centroids (-1.06 for

offenders and 1.08 for non-offenders) are equal can be rejected at the .0001 level. The degree of association between the discriminant scores and group membership was .73 (vs. .79 in Study Two). The proportion of variation in the discriminant function explained by the groups was .53 (vs. .62 in Study Two).

Using the six scale reduced model, unbiased estimates of the cross-validation showed that 83.65% (or 190) of the non - offenders were correctly classified and 78.18% of the offenders were correctly classified (Table 20). Shrinkage in the cross-validation was 6% [(190 + 188)/435 - (87 + 86)/214], vs. 5.3% in Study Two).

A *z*-test for the difference in proportions showed the ability of the six factor model to make a statistically significant improvement in classification, compared to that expected on the basis of chance alone (z=6.76, $p < .0001$) (See Table 20).

A second *z*-test for the difference in proportions between the two samples (Glass & Stanley, 1970, p. 311) showed a nonsignificant difference between the 15 scale model and the 5 scale model (z=1.47, $p < .07$).

Discussion

The overall goal was to develop the most parsimonious model that would predict the propensity to commit white

collar crimes. Parsimony was seen both in the number of scales but, most importantly, in the ability of the six scale model to classify as well as the 15 scale model, when corrected for probability of chance classifications.

The cumulative evidence of Studies Two and Three show the value of the Performance scale of the Employment Inventory, the CPI scales, and the Extra-curricular activity biodata factor for predicting white collar criminality. The relationship between the personality-based Employment Inventory and the CPI was previously discussed: the scale items were driven by other measurews, including the CPI. But the Performance scale provided additional information: a discriminant analysis that was performed using only the other five scales (SO, RE, TO, SC, and Extra-curricular) showed an R-squared of .44 (vs. .54 when Performance was in the model). Similarily, Extra-curricular activity contributed to explained variance: a discriminant function without Extra-curricular activity but with the remaining five scales accounted for only .43 of the variance (vs. .54 when it was in the model). When both Performance and Extra-curricular were dropped, R-squared was only .28. Therefore, the combination of the six scales provides the most comprehensive model in terms of predictive ability.

In Study Two, associations between the scales and the construct "conscientiousness" were identified. For example, (SC)Self-control measures disciplined and stable behavior (McAllister, 1988), and (TO)Tolerance measures social intolerance and attitudes (Groth-Marnat, 1984). High scores on SC suggest dependable, reliable, self-controlled, and self-denying behavior (Groth-Marnat, 1984). It was pointed out in Study Two that the combination of the above four scales, along with three other CPI scales, measure personal values, self-control and sense of responsibility. Low scores on the combination would predict opportunistic, action-oriented and risk-taking behavior (McAllister, 1988).

The 15 scales of Study Two provided substantive interpretive meaning for the behavioral tendencies of white collar offenders. And the results of Study Two provided the impetus for further investigation, leading to the refinement of the discriminant function.

Conclusion

The conclusion that is drawn remains unchanged: a function that measures propensities toward or away from the combination of dependable and reliable behaviors, and extra-curricular activities has been shown to discriminate white collar offenders from non-offenders.

STUDY FOUR

Introduction

While the major focus of this study has been on the dichotomous, categorical criterion variable offender/non-offender, ancillary discriminant analysis was conducted on the responses of the male study participants. Separate discriminant analyses were not conducted on female responses because of the smaller sample size for females.

The total developmental sample of 263 males was comprised of 93 non-offenders and 170 offenders. The cross-validation sample of 143 males included 55 non-offenders and 88 offenders.

The instruments, the types of statistical analyses and the 15 scales from Study Two were applied to the data for males only. Therefore, non-offenders and offenders were classified according to the "social conscientiousness" model consisting of six scales: Perform, Extra-curricular, (SO)Socialization, (RE)Responsibility, (TO)Tolerance, and (SC)Self-Control.

Statistical Results

The results of the analyses with the males only group mirrored the results of the entire sample in Study Two. Canonical results showed the overall function to be statistically significant. The value of Wilks' lambda for

the function was .42, distributed as $F(15, 247) = 23.00$, $p < .0001$. The canonical correlation was .76 , and the proportion of variance accounted for was .58 (vs. .79 and .62, respectively, in Study Two). The group centroids were -.87 (offenders) and 1.59 (non-offenders). In the unbiased cross-validation analysis, 72.73% of the non-offenders were correctly classified, and 92.05% of the offenders were correctly classified as offenders. The difference between the overall 90.87% correct classifications in the developmental sample and the 84.61% overall correct classifications in the cross-validation group was 6.3%. This value represents the shrinkage due to biased estimates (of the developmental sample).

Discussion and conclusion

The results of the analysis of Study Four, along with those of the previous three studies presented in this paper reveal the stability and the usefulness of the discriminant function in differentiating white collar offenders from non-offenders.

OVERALL SUMMARY

The purpose of this research was to develop and validate a prediction model for the purpose of selection into white collar positions of authority. As shown in Martin and Terris (1991), in a relative selection situation, any introduction of a procedure having greater validity than previous procedures reduces both false negative and false positive errors. The total error rate is, therefore, also reduced. Personnel selection decisions are different under circumstances of relative conditions than they are for absolute conditions. In absolute decision-making, there are no constraints as to the number of people classified into either category, whereas in selection decisions there are such constraints.

The analyses summarized in the present study demonstrated the utility of the discriminant function in the classification of non-offenders and offenders. The function also provided substantive information concerning the relative contribution of the discriminating variables as well as identifying the nature of the dimensions on which the non-offender/offender groups differed.

LIMITATIONS

Several limitations of the present study must be addressed. First, researchers have pointed out that the answers given to self-report questionnaires may be unreliable. In the prison setting, questions have been raised as to the reliability of self-report responses because the experience may produce changes in the personality. Evidence was reported that white collar offenders, relative to other offenders, do not have as much difficulty in adapting to the prison setting. Support for this hypothesis may exist in the findings of the present study. In Study One, it was stated that frustration is a way of responding to internally or externally imposed barriers, and that Caprara et al.'s (1985a) scale measured the proclivity to perceive events as frustrating. Nonsignificant differences were found between non-offenders and offenders on this dimension. This finding may reflect the adaptiveness of white collar offenders to the prison setting and thus reduce response variance attributed to prison vs. non-prison settings. Although the behavioral measures were all self-report, Hindelang, Hirshi, and Weis (1979) have provided evidence for the validity of confessions of delinquency acts (Rowe, 1986). Further, a number of self-report and peer ratings studies on the

assessments of the same personality dimensions for the same group of individuals showed evidence of validity for measures of self-reports (e.g., McCrae, 1982; McCrae & Costa, Jr., 1987; Watson, 1989, Cheek, 1982).

Despite the above and other evidence for the validity of self-report measures, it is recommended that interpretations are made with caution in the criminal setting, and that such interpretations are made in conjunction with other information (e.g., structured interviews, etc.). For example, Wink and Gough (1990) have pointed out that the empirical study of narcissism is complex because two contradictory elements are seen in the narcissist: attitudes of grandiosity, and feelings of inferiority. Despite these oppositions, however, the authors conclude that "it does seem to be possible to identify via self-report items those persons in whom the critical components of narcissim are present" (Wink & Gough, 1990, p. 459).

Nonetheless, the acts of being caught, convicted, and incarcerated must be very powerful and a major limitation of this concurrent predictive study is that measures over time were not possible.

Funder (1991) made the point that the usefulness of self-reports are limited because, among other reasons,

people do not hold the self-awareness of the operation of their own traits. Other researchers have, however, suggested that only the individual has access to his or her own self-awareness. Funder recommended peer reports as the single best method of trait assessment. It is noted, however, that the California Psychological Inventory, which was developed to assess enduring interpersonal personality characteristics, used peer reports in the empirical derivation of the CPI scales. According to Megargee (1972), "a common procedure was to ask a group of friends and acquaintances to nominate members of their group who were high and low on the trait in question." This does not address Funder's concern, but the point is that superior peer reports (relative to self-reports) may be a function of the way the items are written, and the way in which they were developed.

But a key point must not be overlooked: to the extent that self-report lacks perfect validity (or perfect reliability), the size of the difference between the two groups will be underestimated. Thus, the results of the present study are conservative.

Some may offer criticisms that the environmental situations giving rise to criminality were not considered in this research. The purpose of this research, however,

was not to address that question. To the extent that environmental situations are important determining variables of white collar criminality, this fact would reduce the group differences on personality and other trait dimensions. So, in this sense, environmental situations have been taken into account. (This research indicates that situations are not the whole story, because large trait differences were found.) Carson (1989) presented a summary of the "so-called person-situation controversy," and cited Kenrick and Funder (1988) who said that the lessons from the person-situation debates support the empirical reality and potency of personality traits. Funder (1991) identified three distinct ways in which global traits interact with situations: 1) different traits are relevant to the prediction of behavior in different situations, 2) personality traits affect how people choose what situations to enter, and 3) situations are changed to some extent by the behavior of the people in it. As has been reported in a previous section of this paper, a substantial body of evidence exists to support global personality dimensions.

Other limitations were inherently imposed by the design of the study. The goal was to identify categorical group differences of white collar offenders and non-offenders.

Therefore, differences attributed to age and gender were not examined. (Investigation of the relationship between these, and other, factors, and criminality is in process.) Further, the interpretations of the findings were based on mean aggregate score differences, and the results were reported as "on average." Profile analyses from which individual inferences from group data can be made were not a part of the present research.

Lastly, while the offender sample was obtained from Federal correctional institutions across the country, the comparison sample of non-offenders all presently reside in the same general Midwest geographical area. There is no known reason why this would make any difference, but there could be unknown reasons.

FUTURE RESEARCH

A number of researchers have reported the need for within-group analyses of criminality across a number of dimensions. Based on the findings of the present study, specific constructs to be tested for within-group variance are extra-curricular activity, and conscientiousness.

White collar crime is on the increase along with projected rates of incarceration for females as well as for males. A review of the literature on white collar criminality showed an underrepresentation of research with female offenders. In the past, females either did not commit the crimes, or they did and were not caught and/or convicted. Today females are being incarcerated at accelerating rates. Research on male/female differences in types of offenses and differences in propensities to criminality are important for social policy-making decisions.

Similarly, research of possible age differences along the dimensions of the present study for white collar offenders relative to non-offenders has not been conducted.

Further, do the identified global constructs of white collar offenders found in this study similarily predict other types of criminality? Research with delinquents suggest that they may (Gough, 1987) but, again, the

literature is sparse on within-group differences.

Other investigation into the use of biodata vs. personality vs. integrity test measures of criminality is recommended. A factor analysis of these measures in the present study is underway in an effort to understand more clearly the independent contribution of these three methods, and the dimensions that they each measure.

Finally, a concerted effort is needed by sociologists, psychologists, and criminologists, to cumulate and aggregate the material that is currently being driven by the different perspectives investigating white collar crime. Such a collaborative undertaking can better utilize human and financial resources in the scientific investigation of white collar criminality.

Table 1. Federal Prison Locations and Test Dates

Date	Location	Test Time	Inmates
12/26/90	Phoenix, AZ	2:00 pm	08
12/27/90	Phoenix, AZ	9:00 am	04
12/28/90	Englewood, CO	9:00 am	10
1/02/91	Allenwood (Montgomery, PA)	8:00 am	07
1/03/91	McKean (Bradford, PA)	9:00 am	22
1/04/91	Butner, NC	8:00 am	06
1/07/91	Fort Worth, TX	1:30 pm	14
1/07/91	Seagoville, TX	8:00 am	14
1/09/91	Big Spring, TX	1:00 pm	33
1/10/91	Bryan, TX	8:00 am	14
1/11/91	Texarkana, TX	7:30 am	17
1/11/91	Texarkana, TX	11:45 am	13
1/14/91	Maxwell AFB, AL	7:00 am	21
1/15/91	Atlanta, GA	8:00 am	35
1/16/91	Lexington, KY	8:00 am	16
1/17/91	Terre Haute, IN	8:00 am	09
1/17/91	Terre Haute, IN	1:00 pm	07
1/18/91	Milan, MI	8:00 am	12

Table 1 (Continued)

Date	Location	Test time	Inmates
2/27/91	Alderson, W. VA	10:30 am	47
2/28/91	Alderson, W. VA	1:00 pm	
3/11/91	Rochester, MN	5:30 pm	20
4/30/91	Duluth, MN	7:30 am	24
5/01/91	Sandstone, MN	7:30 am	12

Table 2. Crimes Committed and Number of Offenders

Crime	Number of offenders
Antitrust violation	1
Counterfeiting - currency	23
Counterfeiting - securities	2
Counterfeiting - unknown	6
Embezzlement - bank	35
Embezzlement - other	7
Embezzlement - savings & loans	1
Embezzlement - union funds	2
Forgery	13
Fraud - bank	93
Fraud - bankruptcy	2
Fraud - credit card	15
Fraud - computer and wire	15
Fraud - equity skimming	1
Fraud - Internal Revenue Service	27
Fraud - other	8
Fraud - pension	1
Fraud - postal	13

Table 2 (Continued)

Crime	Number of offenders
Fraud - signal	1
Fraud - securities	11
Interstate transportation of stolen motor vehicles	2
Misuse of public funds	1
Unknown white collar crimes	74
Money laundering	1
Political bribery	4
Racketeer influence in corrupt organizations (RICO)	6
Total crimes	365

Table 3. Workplace Organizations, Numbers of Employees, and Dates of Test Administration

Place	Date		Employees
City of 25,000	September 19, 1990	9:00 a.m.	
City Hall	September 19, 1990	1:00 p.m.	
	September 20, 1990	9:00 a.m.	
	September 20, 1990	1:00 p.m.	73
City of 100,000	November 19, 1990	9:00 a.m.	
City Auditorium	November 19, 1990	1:00 p.m.	
Conference Rooms	November 20, 1990	9:00 a.m.	
	November 20, 1990	1:00 p.m.	
Public Utilities	March 28, 1991	8:30 a.m.	
Building	March 28, 1991	1:00 p.m.	113
County Government	March 12, 1991	9:00 a.m.	
County Office	March 12, 1991	1:00 p.m.	
Building Con-	March 13, 1991	9:00 a.m.	
ference Rooms	March 13, 1991	1:00 p.m.	84
State University	March 14, 1991	8:30 a.m.	
	March 14, 1991	1:00 p.m.	
	March 15, 1991	8:30 a.m.	
	March 15, 1991	1:00 p.m.	44

Table 3 (continued)

Place	Date	Employees
Two Banks[a]	December 4, 1990	30

[a]The bank vice-presidents delivered 40 tests in self-return manila packets to bank officials for their voluntary participation. Of the 40 packets delivered, 30 were returned.

Table 4. Educational Levels for Non-Offenders and Offenders

	Frequency	
Education	Non-Offender[a]	Offender[b]
8th Grade	0	19
12th Grade	42	75
Technical School	51	31
Community College	56	59
Four-Year College	81	67
Graduate School	95	86

[a]Missing Observations = 6; N=331.

[b]Missing Observations = 9; N=346.

Table 5. Means, Standard Deviations, and t-Scores for Study One Hypotheses

Variable	Group[a]	Mean	Standard Deviation	t(675)
IScore (Irritability)	1	35.94	12.24	
	2	36.53	15.87	-.53 ns
AI (Achievement via Independence)	1	23.38	5.35	
	2	20.93	5.44	5.90*
CS (Capacity for Status)	1	16.23	3.72	
	2	16.45	4.22	-.72 ns

[a]1 = Non-Offender (N=331).

2 = Offender (N=346).

*$p < .0001$.

ns = nonsignificant.

Table 6. *d* values[a] for 43 Scales

Scale Name	d
DO(Dominance)	-.27
CS(Capacity for status)	-.06
SY(Sociability)	-.22
SP(Social presence)	-.10
SA(Self-acceptance)	-.33
IN(Independence)	-.31
EM(Empathy)	.08
RE(Responsibility)	.87
SO(Socialization)	1.00
SC(Self-control)	.37
GI(Good Impression)	-.05
CM(Communality)	.70
WB(Well-being)	.23
TO(Tolerance)	.85

$$a_d = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1-1)S_1^1 + (n_2-1)S_2^2}{(n_1-1) + (n_2-1)}}}$$

Table 6. (Continued)

Scale Name	d
AC(Achievement via conformance)	.30
AI(Achievement via independence)	.51
IE(Intellectual efficiency)	.15
PY(Psychological-mindedness)	.29
FX(Flexibility)	.22
MP(Managerial potential)	-.42
WO(Work orientation)	.52
CT(Creative temperament)	.03
ANX(Anxiety)	-.36
LEO(Law Enforcement orientation)	.13
NAR(Narcissism)	-.65
IScore(Irritability)	-.03
Probscor(Probability of risk)	-.68
Perform(Performance)	1.55
Tenure	.78
Frankness	.76
Infrequency	-.45
Athletic Involvement	-.36
Academic Achievement	.00
Socioeconomic status	-.32

Table 6. (Continued)

Scale Name	d
Religious activity	.04
Negative social adjustment	.16
Scientific interest	-.51
Extra-curricular activity	-.91
Independence-dominance	-.63
Sibling rivalry	.35
Academic interest	-.29
Social extroversion	-.81
Warmth of parental relationship	-.10
Developmental sample	2.57
Cross-validation sample	1.97

Table 7. T-test of the Multiplicative Model for Study One

Model[a]	Group[b]	Mean	Standard Deviation	t(647)
Model Score	1	108.27	34.20	
	2	141.76	50.69	-9.83*

[a]Model = CS (Capacity for Status) + Irritability + [Probscor-1 * (CS + Narcissism)] - Probscor, where Probscor = probability of risk.

[b]1 = Non-offender (N=320).

2 = Offender (N=329).

*p < .0001.

Table 8. Reliabilities, Means, Standard Deviations, and t-Scores for Non-offenders and Offenders for 43 Scales

Variable	Alpha[a]	Group[b]	Mean	Standard Deviation	t(433)
DO(Dominance)	.85	1	22.42	6.60	-2.40**
	.83	2	23.91	6.40	
CS(Capacity for status)	.65	1	16.36	3.74	-0.67 ns
	.71	2	16.62	4.23	
SY(Sociability)	.79	1	20.17	5.33	-2.72**
	.77	2	21.52	5.02	
SP(Social presence)	.74	1	23.91	4.94	-1.50 ns
	.71	2	24.62	4.84	
SA(Self-acceptance)	.56	1	17.61	3.40	-2.85**
	.66	2	18.60	3.84	

[a]Reliabilities are Cronbach coefficient alphas.

[b]1 = Non-offenders (N=216); 2 = Offenders (N=219).

[c]Coefficient alphas were calculated for total sample, across prisons.

*$p < .05$ **$p < .01$ ***$p < .001$; ns = nonsignificant.

Table 8 (continued)

Variable	Alpha[a]	Group[b]	Mean	Standard Deviation	t(433)
IN(Independence)	.75	1	17.29	4.47	-2.96**
	.71	2	18.53	4.27	
EM(Empathy)	.63	1	20.63	4.66	0.32 ns
	.64	2	20.48	4.84	
RE(Responsi-	.71	1	26.87	4.33	8.99***
bility)	.77	2	22.67	5.35	
SO(Socialization)	.69	1	32.78	5.53	10.39***
	.69	2	26.87	6.32	
SC(Self-control)	.80	1	23.17	5.73	3.84***
	.86	2	20.77	7.25	
GI(Good Impres-	.81	1	18.99	6.09	-0.50 ns
sion)	.84	2	19.31	6.95	
CM(Communality)	.50	1	36.16	1.83	6.71***
	.83	2	33.91	4.58	
WB(Well-being)	.83	1	31.42	4.87	2.32*
	.85	2	30.22	5.79	
TO(Tolerance)	.69	1	22.16	4.15	9.65***
	.75	2	17.94	4.93	
AC(Achievement	.73	1	28.75	4.61	3.12***
via conformance)	.79	2	27.24	5.44	

Table 8 (continued)

Variable	Alpha[a]	Group[b]	Mean	Standard Deviation	t(433)
AI(Achievement via independence)	.77	1	23.69	5.17	5.29***
	.75	2	21.04	5.28	
IE(Intellectual efficiency)	.73	1	29.05	5.04	1.54 ns
	.71	2	28.30	5.16	
PY(Psychological mindedness)	.58	1	16.17	3.46	2.98***
	.61	2	15.14	3.71	
FX(Flexibility)	.64	1	12.75	3.80	2.34**
	.68	2	11.90	4.07	
MP(Managerial potential)	.80	1	5.10	1.95	-4.20***
	.80	2	5.90	1.83	
WO(Work orientation)	.80	1	29.76	5.26	5.41***
	.80	2	26.82	6.02	
CT(Creative temperament)	.71	1	20.83	5.25	0.33 ns
	.64	2	20.67	4.87	
ANX(Anxiety)	.49	1	4.63	2.10	-3.76**
	.50	2	5.48	2.60	
LEO(Law Enforcement orientation)	.46	1	27.30	3.79	1.31 ns
	.48	2	26.80	4.04	

Table 8 (continued)

Variable	Alpha[a]	Group[b]	Mean	Standard Deviation	t(433)
NAR(Narcissism)	.79	1	22.41	6.56	-6.79***
	.84	2	27.03	7.58	
IScore(Irrita-	.84	1	35.41	12.13	-0.34 ns
bility)	.87	2	35.88	16.26	
Probscor(Proba-	.82	1	2.49	.75	-7.12***
bility of Risk)	.75	2	3.11	1.03	
Perform(Perfor-	.60	1	59.67	7.28	16.16***
mance)[c]		2	46.83	9.17	
Tenure[c]	.67	1	24.16	4.44	8.13***
		2	20.37	5.26	
Frankness(Lie	.50	1	7.90	1.58	7.90***
scale)[c]		2	6.56	1.95	
Infrequency[c]		1	.07	.25	4.33***
		2	.27	.63	
Athletic	.86	1	3.06	.89	-3.75**
Involvement	.84	2	3.38	.84	
Academic	.94	1	3.23	.90	0.02 ns
Achievement	.90	2	3.23	.80	

Table 8 (continued)

Variable	Alpha[a]	Group[b]	Mean	Standard Deviation	t(433)
Socioeconomic status	.83	1	2.55	.67	-3.33***
	.85	2	2.80	.80	
Religious Activity	.75	1	3.17	.81	0.45 ns
	.74	2	3.13	.90	
Negative social adjustment	.73	1	2.78	.48	1.64 ns
	.77	2	2.70	.60	
Scientific interest	.80	1	2.82	.65	-5.32***
	.81	2	3.17	.72	
Extra-curricular activity	.63	1	1.74	.61	-9.51***
	.70	2	2.38	.79	
Independence-dominance	.60	1	2.80	.54	-6.59***
	.52	2	3.16	.60	
Sibling rivalry	.81	1	3.00	.87	3.68**
	.73	2	2.68	.86	
Academic interest	.81	1	3.22	.66	-3.08*
	.80	2	3.42	.70	
Social extroversion	.84	1	2.63	.57	-8.46***
	.80	2	3.10	.58	

Table 8 (continued)

Variable	Alpha[a]	Group[b]	Mean	Standard Deviation	t(433)
Warmth of parental relationship	.87	1	2.75	.76	-1.06 ns
	.87	2	2.83	.85	
Developmental sample		1	2.87	.92	
		2	.29	1.07	
Hold-out sample		1	2.68	.99	
		2	.35	1.34	

Table 9. Stepdisc Variables Selected

Step	Variable	Partial R^2	F	p <
1	Performance	.37	257.27	.0001
2	Extra-curricular activity	.15	76.89	.0001
3	Probability of risk	.08	35.34	.0001
4	Sibling rivalry	.03	13.63	.001
5	(SO)Socialization	.04	17.91	.0001
6	(GI)Good impression	.08	34.76	.0001
7	Academic interest	.02	9.69	.01
8	(RE)Responsibility	.03	14.54	.001
9	(WB)Well-being	.02	8.51	.01
10	Social presence	.02	8.32	.01
11	(IE)Intellectual efficiency	.01	6.28	.01
12	(TO)Tolerance	.02	9.49	.01
13	(ANX)Anxiety	.01	6.04	.01
14	Social extroversion	.01	4.19	.05
15	(CM)Communality	.01	3.57	.05
16	Academic achievement	.01	2.94	.08
17	Scientific interest	.01	3.52	.06
18	(AC)Achievement via conformity	.01	3.28	.07
19	Athletic involvement	.01	3.29	.07

Table 9 (continued)

Step	Variable	Partial R^2	F	$p <$
20	(AI) Achievement via independence	.01	2.32	.12

Table 10. Means, Standard Deviations, and t-Scores for 15 Scales of the Prediction Model

Variable	Group[a]	Mean	Standard Deviation	t(433)
Performance	1	59.67	7.28	16.16***
	2	46.83	9.17	
Extra-curricular activity	1	1.74	.61	.61
	2	2.38	.79	
Probscor	1	2.49	.75	-7.12***
	2	3.11	1.03	
Sibling rivalry	1	3.00	.87	3.68**
	2	2.68	.86	
(SO) Socialization	1	32.78	5.53	10.39***
	2	26.87	6.32	
Academic interest	1	3.22	.66	-3.08*
	2	3.42	.70	

[a] 1 = Non-offender (N=216); 2 = Offender.

*$p < .01$.

**$p < .001$.

***$p < .0001$.

Table 10 (continued)

Variable	Group[a]	Mean	Standard Deviation	t(433)
(RE) Responsibility	1	26.87	4.33	8.99***
	2	22.67	5.35	
(TO) Tolerance	1	22.16	4.15	9.65***
	2	17.94	4.93	
(ANX) Anxiety	1	4.63	2.10	-3.76**
	2	5.48	2.60	
Social extraversion	1	2.63	.57	-8.46***
	2	3.10	.58	
Franknes	1	7.90	1.58	7.90***
	2	6.56	1.95	
(WO) Work Orientation	1	29.76	5.26	5.41***
	2	26.82	6.02	
(WB) Well-being	1	31.42	4.87	2.32
	2	30.22	5.79	
(SC) Self-control	1	23.17	5.73	3.84***
	2	20.77	7.25	
(NAR) Narcissism	1	22.41	6.56	-6.79***
	2	27.03	7.58	

Table 11. Total Sample Statistics and Correlations for the Discrimi

Variable	M	SD	1	2	3	4	5
1. Performance	53.3	10.5	(.60)				
2. Extra-curricular	2.1	.77	-.18	(.73)			
3. Probscor	2.8	.95	-.12	.18	(.79)		
4. Sibling rivalry	2.8	.87	.04	-.10	-.02	(.78)	
5. (SO) Socialization	30.0	6.6	.63	.01	-.12	-.13	(.73)
6. Academic interest	3.3	.68	.12	.49	.09	-.10	.32
7. (RE) Responsibility	24.8	5.3	.55	.06	-.10	-.00	.72
8. (TO) Tolerance	20.0	5.0	.58	-.08	-.16	-.08	.62
9. Anxiety	5.3	2.4	-.22	.01	.09	.11	-.49
10. Social extraversion	3.0	.62	-.27	.56	.16	-.15	.05
11. Frankness	7.2	1.9	.34	-.31	-.11	.15	-.16
12. (WO) Work orientation	28.3	5.8	.44	.03	-.10	-.14	.71
13. (WB) Well-being	31.0	5.3	.32	.01	-.08	-.18	.58
14. (SC) Self-control	22.0	6.6	.49	.03	-.02	-.13	.65
15. (NAR) Narcissism	24.7	7.5	-.58	.19	.03	.06	-.51

Note. Coefficient alpha reliabilities are based on the overall total sample, N=674.

[a]N=435

inating Variables[a]

	6	7	8	9	10	11	12	13	14	15
3)										
2	(.80)									
2	.41	(.76)								
2	.21	.69	(.76)							
4	-.26	-.42	-.43	(.53)						
5	.41	.05	-.06	-.17	(.83)					
5	-.29	-.13	.07	.19	.31	(.50)				
7	.29	.66	.71	-.64	.13	-.21	(.81)			
8	.26	.54	.60	-.71	.14	-.24	.81	(.85)		
9	.20	.57	.56	-.34	-.02	-.30	.67	.58	(.84)	
	-.02	-.42	-.57	.16	.26	-.04	-.50	-.38	-.79	(.82)

Table 12. Standardized Canonical Weights and Total Structure Coefficients

Variable	C	T
PERFORM(Performance)	.628	.776
EXTRAC(Extracurricular activity)	-.387	-.526
PROBSCOR(Probability of risk)	-.322	-.409
SIB(Sibling rivalry)	.202	.221
SO(Socialization)	.614	-.565
ACADINI(Academic interest)	-.283	-.185
RE(Responsibility)	.352	.502
TO(Tolerance)	.210	.532
ANX(Anxiety)	.249	-.225
SOCEXTR(Social extraversion)	-.168	-.477
FRANKNESS	.173	.449
WO(Work orientation)	.086	.319
WB(Well-being)	-.542	.140
SC(Self-control)	-.300	.230
NAR(Narcissism)	.053	-.392

Table 12 (continued)

Note. C = Standardized canonical weights; T = Total canonical structure coefficients. In interpreting the direction of the weights, it may be noted that non-offenders were coded 1, whereas, offenders were coded 2. For the function as a whole, Wilks' lambda = .38, $F(15, 49) = 46.55$, $p < .0001$, the eigenvalue = 1.67, and R = .78. Group centroids were 1.296 and -1.271 for non-offenders and offenders, respectively.

*$p < .001$.

Table 13. Results of the Canonical Discriminant Analysis

R_c	Approximate Standard Error	R_c^2	Eigenvalue	Wilks' lambda	Exact[a] F
.79	.02	.62	1.67	.38	46.55

[a] $p < .0001$.

Table 14. Discriminant Analysis Univariate Test Statistics

Variable	Standard Deviation	R-squared	F(1,433)
Performance	10.48	.38	261.11***
Extra-curricular	.78	.17	90.37***
Probscor	.95	.10	50.68***
Sibling rivalry	.88	.03	13.60**
(SO)Socialization	6.63	.20	108.08***
Academic interest	.68	.02	9.46**
(RE)Responsibility	5.30	.16	80.95***
(TO)Tolerance	5.02	.18	93.19***
Anxiety	2.41	.03	14.14**
Social extraversion	.62	.14	71.60***
Franknes	1.90	.13	62.47***
(WO)Work orientation	5.84	.06	29.34***
(WB)Well-being	5.38	.01	5.39*

*$p < .05$.

**$p < .01$.

***$p < .001$.

Table 14 (continued)

Variable	Standard Deviation	R-squared	$F(1,433)$
(SC) Self-control	6.64	.03	14.71***
(NAR) Narcissism	7.45	.10	46.07***

Table 15. Number of Observations and Percent Classified for the Developmental Sample

	Classification		
	Non-offender	Offender	Total
Non-offender	193	23	216
	89.35	10.65	100.00
Offender	21	198	219
	9.59	90.41	100.00
Total	214	221	435
Percent	49.20	50.80	100.00

Note. Priors = .4966 (Non-offender), .5034 (Offender).

Table 16. Classifications of Observed Hits

	Observed hits		
	Non-offender	Offender	Total
Non-offender	193	23	216
	(.894)		
Offender	21	198	219
	(.096)		
Total	214	221	435
Priors	.497	.503	

Table 17. Classification of Expected Hits

	Expected hits		
	Non-offender	Offender	Total
Non-offender	106	110	216
	(.492)		
Offender	108	111	219
	(.492)		
Total	214	221	435

Note.

$$z = \frac{(o-e)\sqrt{N}}{\sqrt{e(N-e)}} = \frac{(391-217)\sqrt{435}}{\sqrt{217(218)}} = 16.76,$$

where o = overall number of hits.

e = a chance number.

Table 18. Number of Observations and Percent Classified for the Cross-Validation Sample

	Classification		
	Non-offender	Offender	Total
Non-offender	91	13	104
	87.50	12.50	100.00
Offender	20	90	110
	18.18	81.82	100.00
Total	111	103	214
Percent	51.87	48.13	100.00

Note. Priors = .4966 (Non-offender), .5034 (Offender).

Table 19. Results of the Canonical Discriminant Analysis for the Six Factor Model

R_c	Approximate Standard Error	R_c^2	Eigenvalue	Wilks' lambda	Exact[a] F
.73	.02	.54	1.156	.46	82.44

[a] $p < .0001$.

Table 20. Unbiased Estimates of the Number of Observations and Percent Classified for the Six Factor Model in the Hold-out Sample

	Classification		
	Non-offender	Offender	Total
Non-offender	87	17	104
	83.65	16.35	100.00
Offender	24	86	110
	21.82	78.18	100.00
Total	111	103	214
Percent	51.87	48.13	100.00

Note.

Priors = .4966 (Non-offender), .5034 (Offender).

Correction for chance:

$$z = \frac{(o-e)\sqrt{N}}{\sqrt{e(N-e)}} = \frac{(173-104)\sqrt{110}}{\sqrt{104(110)}} = 6.76,$$

where o = overall number of hits.

e = a chance number.

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APPENDIX A.

JOB DESCRIPTIONS OF WORKPLACE SAMPLE

JOB DESCRIPTIONS OF WORKPLACE SAMPLE

Bank Loan Officers
Bank Operation Officers
Bank Trust Officers
Department Supervisors
Administrative Assistants
University President
University Deans
Personnel Administrators
Assistant County Attorneys
Legal Assistants
Assistant Planning Director
Social Workers
Social Worker Supervisor
Financial Supervisor
City Assessor
Accounting Technician
Court Supervisors
Court Specialists
Public Health Nurses
Administrative Assistants
Environmental Specialist
Computer Operators I
Account Clerks II
Maintenance Supervisor
Financial Workers
Community Center Supervisor
Planning Director
Account Clerks I
Child Support Officer
Social Service Director
Highway Engineer
Appraiser III
Office Services Supervisor
Court Service Officer
Court Service Director
Court Administrator
County Treasurer
Computer Operators II
Building Superintendent
Building Superintendent
County Health Services Administrator
Administrative Specialist
County Attorneys
Welfare Fraud Investigator
Account Clerks
Court Specialist

Human Resources Director
Graphics Specialist
Financial Specialist
Veterans Service Officer
Solid Waste Management Director
County Coordinator
Child Support Officer
Central Services Clerks
Accountants
City Administrators
Assistant City Administrators
City Clerk
Deputy City Clerk
Director of Finance
Purchasing Agent
Accountants II
Accounting Technicians
Accountant I
Accounting Clerk
Director Finance & Accounting
Customer Service Field Representatives
Customer Relations Manager
Lead Customer Service Representatives
Customer Services Supervisors
Librarians
Director Library Services
Library Associates II
Library Associates I
Deputy Director - Library
Librarians II Reference
Data Processing Supervisor
Data Processing Clerk
Programmer Analysts
Computer Programmers
Data Entry/Programmers
City Attorneys
Deputy City Attorneys
Assistant City Attorneys
Personnel Assistants
Director of Employee Relations
Sergeants - Police
Captains - Police
Detectives - Police
Lieutenant - Police
Police Officers
Fire Chief
Assistant Chief Fire Prevention
Assistant Chief Fire Operations
Chief Inspector (Building and Safety)

Inspector (Building)
Building Official
Office Services Coordinator
Chief Inspectors
Plans Checker
Chief Inspector
Chief Plans Checker
City Engineer Design & Development
Senior Engineering Technicians
Office/Assessments Manager
Right-of-Way Agent
City Engineer Construction & Maintenance
Design Engineer
Accounting Technicians
Engineering Technicians
Senior Engineering Technicians
Transit Surveyor
Associate Engineering Technician
Transit Planner
Director Special Services
Director Recreation
General Manager - Utilities
Superintendent of Power Production
Maintenance Supervisor (Water)
Director Power Division
Chief System Operator
Manager of Engineering
System Operator
Lead Electrician
Construction Coordinator
Supervisor Drafting & Design
Results Technician
Associate Engineering Technician/Drafter
Senior Electrical Engineer
Electronics Technician
Senior Mechanical Engineer
Programmer/Analysts
Manager of Information Systems
Technical Support Analyst
Computer Operator
Programmers
Accounting Manager
Accounting Technician II
Director Management Services
Purchasing Clerk
Manager Purchasing & Stores
Buyer
Store Clerks
Stores Controller

Lead Store Clerk
Manager of Facility Services
Superintendent Water Operations
Director Water Division
Maintenance Supervisor (Water)
Assistant Water Reclamation Plant Manager
Water Reclamation Plant Manager
Environmental Coordinator - Water Reclamation Plant
Maintenance Technician

APPENDIX B.

GENERAL INFORMATION STATEMENT

GENERAL INFORMATION STATEMENT

1. Name of researcher and organization affiliation: Judy Collins, Doctoral graduate student, Iowa State University, Ames, Iowa.
2. Title of study: White collar criminality: Teory and prediction.
3. Objectives of the study: To identify possible psychological differences between incarcerated white collar workers and non-incarcerated white collar workers.
4. Description and purposes of the procedures: Responses by incarcerated workers and non-incarcerated workers to each of five instruments will be evaluated in an effort to identify psychological differences between the two groups. The five instruments are: 1) The Irritability Scale; it measures proneness to frustration and irritability, 2) The California Psychological Inventory; it measures such concepts as desire for achievement, success, power, 3) The Biographical Questionnaire; it measures perceptions of past life experiences, and 4) The PDI Employment Inventory; which it measures concepts such as attitudes toward work and toward fellow workers. In addition, seven questions have been added which ask you to estimate probabilities of white collar offenses, whether you are a twin, and your level of education.

5. Use of results: The responses to the instrument will be used solely by Judy Collins for the conduct of her dissertation. Volunteer participants will not be identified by name, or i.d. number, or in any other way.
6. Risks and discomforts: There are no risks. The total testing time of approximately 2 1/2 hours may be a discomfort.
7. Possible benefits to you or others from participating in this study: Much can be done environmentally to discourage offending behavior. If differences are found between offenders and nonoffenders (in individual characteristics, past life experiences, and perceptions of workplace situations), avenues of intervention can be sought, and energies can be directed to behavior that can be fulfilling and satisfying to the individual.
8. Benefit to the researcher: Your participation provides for Judy Collins the opportunity to conduct a study of meaningful interest, and to fulfill dissertation requirements for the Doctor of Philosophy degree. Your participation is completely voluntary and you may refuse participation at any time without penalty or prejudice. All research information will be handled in the strictest confidence and your participation will not be individually identifiable in any reports. If you are an inmate, your participation or non-participation in this

research project will not affect your release date or parole eligibility. Do you have any questions or concerns about the above items?

APPENDIX C.

INFORMED CONSENT STATEMENT FOR PRISON SAMPLE

INFORMED CONSENT STATEMENT FOR PRISON SAMPLE

SIGNED CONSENT

I _____ understand the study entitled _____

I consent to the following procedures:

1. I consent to complete four questionnaires.

Initials_____

I understand that all research information will be handled in the strictest confidence and that my participation will not be individually identifiable in any way. I understand that participation or non-participation in this research project will not affect my release date or parole eligibility. I further understand that there is no penalty or prejudice of any kind for withdrawing from or not participating in the study.

_____ _____
(Signature) (Date)

_____
(Register Number) (Unit)

_____
(Witness Signature)

APPENDIX D.

INFORMED CONSENT STATEMENT FOR WORKPLACE SAMPLE

INFORMED CONSENT STATEMENT FOR WORKPLACE SAMPLE

SIGNED CONSENT

I _____ understand the study entitled _____

I consent to the following procedures:

1. I consent to complete questionnaires.

Initials_____

I understand that all research information will be handled in the strictest confidence and that my participation will not be individually identifiable in any way. I further understand that there is no penalty or prejudice of any kind for withdrawing from or not participating in the study.

_____ _____

(Signature) (Date)

APPENDIX E.

DEBRIEFING STATEMENT

DEBRIEFING STATEMENT

1. Participants were asked if there were any questions or concerns regarding the:
    a) California Psychological Inventory (CPI)
    b) Irritability Scale
    c) Biographical Questionnaire (BQ)
    d) Employment Inventory
    e) Probscor Questionnaire
2. Participants were asked if there were any questions regarding the:
    a) nature of the study.
    b) design of the study.
    c) results of the study.
3. Participants were provided with the name and address of the principal investigator:

Principal Investigator: Judith M. Collins
Address: Department of Psychology
W263 Lagomarcino Hall
Iowa State University
Ames, Iowa 50011

APPENDIX F.

THE IRRITABILITY SCALE

SELF-DESCRIPTION QUESTIONNAIRE[1]

This is a survey of personal attributes that you may have experienced or thought about. There are no "right" or "wrong" answers; the best answer is the first one that occurs to you. Using the following scale, indicate the response that reflects your first reaction to each statement. For each item, fill in completely the circle on the answer sheet that reflects the number of your response.

6 = completely true for me

5 = fairly true for me

4 = true to a certain extent

3 = false to a certain extent

2 = fairly false for me

1 = completely false for me

1. I easily fly off the handle with those who don't listen or understand.
2. I am often in a bad mood.
3. Usually when someone shows a lack of respect for me, I let it go by.
4. I have never been touchy.

---

[1]For purposes of the present study the Irritability Scale was renamed The Self-Description Questionnaire.

5. It makes my blood boil to have someone make fun of me.
6. I think I have a lot of patience.
7. When I am irritated I need to vent my feelings immediately.
8. When I am tired I easily lose control.
9. I think I am rather touchy.
10. When I am irritated I can't tolerate discussions.
11. I could not put anyone in his place, even it if were necessary.
12. I can't think of any good reason for resorting to violence.
13. I often feel like a powder keg ready to explode.
14. I seldom strike back even if someone hits me first.
15. I can't help being a little rude to people I don't like.
16. Sometimes when I am angry I lose control over my actions.
17. I do not know of anyone who would wish to harm me.
18. Sometimes I really want to pick a fight.
19. I do not like to make practical jokes.
20. When I am right, I am right.
21. I never get mad enough to throw things.
22. When someone raises his voice I raise mine higher.
23. Sometimes people bother me just by being around.
24. Some people irritate me if they just open their mouth.
25. Sometimes I shout, hit and kick to let off steam.
26. I don't think I am a very tolerant person.

27. Even when I am very irritated I never swear.

28. It is others who provoke aggression.

29. Whoever insults me or my family is looking for trouble.

30. It takes very little for things to bug me.

SCORING FOR THE IRRITABILITY SCALE[2]

1. I can easily fly off the handle with those who don't listen or understand.
2. I am often in a bad mood.
3. Usually when someone shows a lack of respect for me, I let it go by. (C)
4. I have never been touchy. (C)
5. It makes by blood boil to have somebody make fun of me.
6. I think I have a lot of patience. (C)
7. When I am irritated I need to vent my feelings immediately.
8. When I am tired I easily lose control.
9. I think I am rather touchy.
10. When I am irritated I can't tolerate discussions.
11. I could not put anyone in his place, even if it were necessary. (C)
12. I can't think of any good reason for resorting to violence. (C)
13. I often feel like a powder keg ready to explode.

---

[2]The sum of responses to items represents frustration-aggression tendencies on a continuum from low to high where high scores indicate strong frustration-aggression tendencies.

14. I seldom strike back even if someone hits me first. (C)
15. I can't help being a little rude to people I don't like.
16. Sometimes when I am angry I lose control over my actions.
17. I do not know of anyone who would wish to harm me. (C)
18. Sometimes I really want to pick a fight.
19. I do not like to make practical jokes. (C)
20. When I am right, I am right.
21. I never get mad enough to throw things. (C)
22. When someone raises his voice I raise mine higher.
23. Sometimes people bother me just by being around.
24. Some people irritate me if they must open their mouth.
25. Sometimes I shout, hit and kick to let off steam.
26. I don't think I am a very tolerant person.
27. Even when I am very irritated I never swear. (C)
28. It is others who provoke my aggression.
29. Whoever insults me or my family is looking for trouble.
30. It takes very little for things to bug me.

APPENDIX G.

THE CALIFORNIA PSYCHOLOGICAL INVENTORY:

SCALE TITLES AND DESCRIPTIONS

THE CALIFORNIA PSYCHOLOGICAL INVENTORY:

SCALE TITLES AND DESCRIPTIONS (McAllister, 1988)

Title	Intended Implications of Scores	
Do(Dominance)	Higher:	confident, assertive, dominant, task-oriented
	Lower:	unassuming, not forceful.
Cs(Capacity for Status)	Higher:	ambitious, wants to be a success, independent
	Lower:	unsure of self, dislikes competition.
Sy(Sociability)	Higher:	sociable, likes to be with people, friendly
	Lower:	shy, feel uneasy in social situations, prefers to keep in the background.
Sp(Social Presence)	Higher:	self-assured, spontaneous; a good talker; not easily embarrassed.
	Lower:	cautious, hesitant to assert own views or opinions; not sarcastic or sharp-tongued.

Title	Intended Implications of Scores	
Sa(Self-acceptance)	Higher:	has good opinion of self; sees self as talented, and as personally attractive.
	Lower:	self-doubting; readily assumes blame when things go wrong; often thinks others are better.
In(Independence)	Higher:	self-sufficient, resourceful, detached.
	Lower:	lacks self-confidence, seeks support from others.
Em(Empathy)	Higher:	comfortable with self and well-accepted by others; understands the feelings of others.
	Lower:	ill at ease in many situations; unempathetic.
Re(Responsibility)	Higher:	responsible, reasonable, takes duties seriously.
	Lower:	not overly concerned about duties and obligations; may be careless or lazy.

Title	Intended Implications of Scores	
So(Socialization)	Higher:	comfortably accepts ordinary rules and regulations; finds it easy to conform.
	Lower:	resists rules and regulations; finds it hard to conform; not conventional.
Sc(Self-control)	Higher:	tried to control emotions and temper; takes pride in being self-disciplined.
	Lower:	has strong feelings and emotions, and makes little attempt to hide them; speaks out when angry or annoyed.
Gi(Good impression)	Higher:	wants to make a good impression; tries to do what will please others.
	Lower:	insists on being himself or herself, even if this causes friction or problems.

Title	Intended Implications of Scores	
Cm(Communality)	Higher:	fits in easily; sees self as a quite average person.
	Lower:	sees self as different from others; does not have the same ideas, preferences, etc., as others.
Wb(Well-being)	Higher:	feels in good physical and emotional health; optimistic about the future.
	Lower:	concerned about health and personal problems; worried about the future.
To(Tolerance)	Higher:	is tolerant of others' beliefs and values, even when different from or counter to own beliefs.
To(Tolerance)	Lower:	not tolerant of others; skeptical about what they say.

Title	Intended Implications of Scores	
Ac(Achievement via Conformance)	Higher:	has strong drive to do well; likes to work in settings where tasks and expectations are clearly defined.
	Lower:	has difficulty in doing best work in situations with strict rules and expectations.
Ai(Achievement via Independence)	Higher:	has strong drive to do well; likes to work in settings that encourage freedom and individual initiative.
	Lower:	has difficulty in doing best work in situations that are vague, poorly defined, and lacking in clear-cut methods and standards.

Title	Intended Implications of Scores	
Ie(Intellectual Efficiency)	Higher:	efficient in use of intellectual abilities; can keep on at task where others might get bored or discouraged.
	Lower:	has a hard time getting started on things, and seeing them through to completion.
Py(Psychological-mindedness)	Higher:	more interested in why people do what they do than in what they do; good judge of how people feel and what they think about things.
	Lower:	more interested in the practical and concrete than the abstract; looks more at what people do than what they feel or think.

Title	Intended Implications of Scores	
Fx(Flexibility)	Higher:	flexible; likes change and variety; easily bored by routine life and everyday experience; may be impatient, and even erratic.
	Lower:	not changeable; likes a steady pace and well-organized life; may be stubborn and even rigid.
MP(Managerial Potential)	Higher:	responsible, capable, ambitious, value achievement, confident, realistic
	Lower:	dissatisfied, irresponsible, anxious, defensive.
WO(Work Orientation)	Higher:	suggests persons who are reliable, reasonable, disciplined, dependable, and moderate.
	Lower:	suggests persons who are restless, strong-willed, self-centered, and unreliable.

Title	Intended Implications of Sccres	
CT(Creative)	Higher:	active, productive, optimistic, openminded, original thinkers.
	Lower:	reserved, dutiful, passive, traditional.
(V1)Vector 1	Higher:	introverted, inwardly oriented, reserved in manner.
	Lower:	outgoing, confident, talkative.
(V2)Vector 2	Higher:	well-organized, conscientious, dependable, controlled.
	Lower:	pleasure-seeking, self-indulgent, restless, rebellious.
(V3)Vector 3	Higher:	capable, able to cope, fulfilled or actualized.
	Lower:	lacking in resolve, vulnerable to life's traumas, not at all fulfilled or actualized.

Title	Intended Implications of Scores
ANX(Anxiety)	Higher/Lower score implications not reported.
LEO(Law Enforcement Orientation)	Higher/Lower score implications not reported.
NAR(Narcissism)	Higher/Lower score implications not reported.

APPENDIX H.

THE CALIFORNIA PSYCHOLOGICAL INVENTORY:

SCALE ABBREVIATIONS

THE CALIFORNIA PSYCHOLOGICAL INVENTORY: SCALE ABBREVIATIONS

Abbreviation	Scale Name
DO	Dominance
CS	Capacity for status
SY	Sociability
SP	Social presence
SA	Self-acceptance
IN	Independence
EM	Empathy
RE	Responsibility
SO	Socialization
SC	Self-control
GI	Good Impression
CM	Communality
WB	Well-being
TO	Tolerance
AC	Achievement via conformance
AI	Achievement via independence
PY	Psychological mindedness
FX	Flexibility
MP	Managerial potential
WO	Work orientation
CT	Creative temperament

Abbreviation	Scale Name
ANX	Anxiety
LEO	Law Enforcement Orientation
NAR	Narcissism

APPENDIX I.

BIODATA QUESTIONNAIRE (MALES):

SCALE DESCRIPTIONS

BIOGRAPHICAL QUESTIONNAIRE (MALES): SCALE DESCRIPTIONS

Factor name	Alpha[1]	Description
Athletic Involvement (10)[2]	.88	Frequent participation in athletic events, enjoyed physical education classes, excellent performance in athletic activities, thought to be popular, effective in social situations.
Academic Achievement (18)[2]	.89	Expected to be successful in academic tasks, parents satisfied with grades, high academic standing.
Parental Control vs. Freedom (8)[2]	.82	Parents are strict, critical, and punitive, parents allowed little freedom and tended to nag and push for higher achievement.
Socioeconomic Status (11)[2]	.80	High parental education level, above average family income, high parental occupation level, attended camps.

[1]Reliability estimates are coefficient alphas.

[2]Number of items comprising the factor.

Factor name	Alpha[1]	Description
Social Extroversion and Popularity (17)[2]	.84	Participated in and directed group activities, held leadership positions, effective in social situations, dated at an early age.
Religious Activity (4)[2]	.82	Active in church, religious, or charitable organizations, went to church often, had strong religious beliefs.
Negative Social Adjustment (11)[2]	.71	Wanted to become more socially acceptable, "took things out" on friends and parents, felt downcast, dejected, or self-conscious.
Scientific Interest (13)[2]	.80	Enjoyed science and lab courses and found them quite easy, worked with scientific apparatus outside of class.
Warmth of Parental Relationship (12)[2]	.83	Close warm relationship with parents, affection, praise, and attention given by parents, felt good about achievement of parents.

Factor name	Alpha[1]	Description
Extracurricular Activity (11)[2]	.75	Active in subject matter clubs or student council, held positions of leadership, read literary, business, or scientific magazines.
Independence/ Dominance (8)[2]	.67	Enjoyed discussion courses, frequently questioned teachers, regarded as radical or unconventional.
Sibling Friction (5)[2]	.73	Felt friction and competition with siblings, argued or fought with siblings, had more younger brothers and sisters.
Academic Interest (11)[2]	.76	Liked school and teachers, enjoyed courses more while doing more, homework, teachers aroused interests, questioned teachers.

APPENDIX J.

BIODATA QUESTIONNAIRE (FEMALES):

SCALE DESCRIPTIONS

BIOGRAPHICAL QUESTIONNAIRE (FEMALES): SCALE DESCRIPTIONS

Factor name	Alpha[1]	Description
Social Leadership/Popularity with Opposite sex (19)[2]	.86	Participated in school politics, held leadership positions, went on more dates, and started dating regularly and going steady earlier.
Academic Achievement (12)[2]	.89	Earned high grades with high class standing, competitive in academic situations and expected to be successful.
Freedom from Parental Control (10)[2]	.85	Parents less strict and critical, allowed more freedom or independence, less punitive.

[1]Reliability estimates are coefficient alphas.

[2]Number of items comprising the factor.

Factor name	Alpha[1]	Description
Socioeconomic Status (1)[2]	.82	High parental level of education, high parental occupation level, above average family income, parents belong to many social and professional clubs.
Athletic Participation (9)[2]	.88	Rated past performance in physical activities high, very active in athletic activities, engaged in more individual team sports, frequently read sports magazines.
Religious Activity (4)[2]	.83	Strong religious beliefs, went to church often, active in church and religious activities, religion important to family.
Negative Social Adjustment (16)[2]	.79	Frequent misunderstanding with parents, felt downcase and dejected, felt like "taking things out" on parents and friends, wanted to be more socially acceptable and powerful.

Factor name	Alpha[1]	Description
Warmth of Maternal Relation-ship (11)[2]	.79	Very close to mother, mother provided emotional support and interest, discussed intimate matters with mother.
Sibling Friction (3)[2]	.76	Felt more friction and feelings of competition toward siblings and had more frequent arguments with them.
Warmth of Paternal Relation-(9)[2]	.84	Very close to father, father pro-vided emotional support, support, interest, and attention, both parents gave affection, praise and attention.
School and Cultural Activities (11)[2]	.71	Active in high school subject matter clubs, worked on school newspaper or annual, held leadership positions, watched educational and cultural television programs.
Scientific Interest (11)[2]	.87	Enjoyed science courses, worked often with scientific equipment, excelled in biological sciences.

Factor name	Alpha[1]	Description
Independence/ Dominance (8)[2]	.80	Enjoyed discussion courses, participated in a great deal of small group activities, questioned teachers on subject matter, was regarded as radical or unconventional.
Positive Academic Attitude (9)[2]	.77	Teachers aroused academic interests and allowed class participation, liked school and teachers, spent more hours per week doing homework.
Position in Family (2)[2]	.80	More younger brothers and sisters closer to their age.

APPENDIX Ka.

THE GENERAL BIODATA QUESTIONNAIRE (GBQ):

SCALE DESCRIPTIONS

GENERAL BIODATA QUESTIONNAIRE (GBQ): SCALE DESCRIPTIONS

Factor name	Alpha[1]	Description
Athletic Participation (8)[2]	.86	Active in athletic activities.
Academic Achievement (12)[2]	.92	High academic standing. Expected to be successful in academic tasks.
Socioeconomic Status (10)[2]	.84	High parental education level, above average income, high parental occupational level.
Religious Activity (4)[2]	.74	Strong religious beliefs, went to church often, active in church and religious activities.
Negative Social Adjustment (11)[2]	.75	Wanted to become more socially acceptable, "took things out" on friends and parents, felt downcast and dejected.

[1]Reliability estimates are coefficient alphas.

[2]Number of items comprising the factor.

Factor name	Alpha[1]	Description
Scientific Interest (9)[2]	.81	Enjoyed science and lab courses, and worked with scientific equipment.
Extra-curricular Activity (6)[2]	.72	Active in subject matter clubs and held positions of leadership.
Independence/ Dominance (6)[2]	.60	Enjoyed discussion courses, frequently questioned teachers, regarded as radical or unconventional.
Sibling Rivalry (3)[2]	.77	Felt friction and competition with siblings, argued or fought with them.
Academic Interest (8)[2]	.80	Liked school and teachers, teachers aroused interest, spent more hours per week doing homework.
Warmth of Paternal Relationship (9)[2]	.86	Very close to father, father provided emotional support, interest, and attention, both parents gave affection, praise and attention.

Factor name	Alpha[1]	Description
Social Extra-version	.84	Socially involved, had many friendships, was popular, participated in and directed group activities, was effective in social situations.

APPENDIX Kb.

GENERAL BIODATA QUESTIONNAIRE (GBQ)[1]

[1]An adaptation of the (BQ), University of Georgia Biographical Questionnaire (Owens & Schoenfeldt, 1979). The items remain the same, but not all items are scored for the General Biodata Questionnaire. Scoring for the GBQ is not the same as for the Biodata Questionnaire.

GENERAL BIODATA QUESTIONNAIRE (GBQ)

There are 118 questions in this booklet. There are no "right" or "wrong" answers. Just select the option that best represents your own background, opinion or feeling. The best answer is usually the one that first occurs to you. For each item fill in the circle that reflects your response. As you read the items, check occasionally to be sure that the question number in the booklet corresponds to the response number on the answer sheet. Do not skip any questions.

All the items which follow are in the familiar multiple choice format. Answer each one by blackening the circle in the appropriate column (A, B, C, D, or E) on your answer sheet.

FOR THE FOLLOWING BLACKEN:

A = very often

B = often

C = sometimes

D = seldom

E = never

1. In high school, how often did you discuss intimate an/or important matters with your father?
2. In high school, how often did your parents criticize you?
3. In high school, how often were your parents angry with you?
4. In the last few years, how often have you had a desire to be alone, to pursue your own interests and thoughts?
5. In high school, how often did you really disagree with your parents?
6. How often have you set difficult goals for yourself which you still attempt to reach?
7. How often have you felt downcast and dejected?
8. In high school, how often do you think you were regarded as radical or unconventional?
9. How often did the rules of conduct in your home anger or frustrate you?

10. In high school, how often did you tend to guide or direct others in group activities?
11. How often have you suffered "attacks of conscience" when you felt that you had done wrong by society's standards?
12. During high school when you wanted to "take it out" on someone, how often did you choose parents?
13. During high school when you wanted to "take it out" on someone, how often did you choose friends or acquaintances?

FOR THE FOLLOWING BLACKEN:

A = very much

B = much

C = some

D = little

E = very little

14. How interested were your parents in activities in which you engaged?
15. Ho much have you liked school?
16. In comparison with others in your high school classes, how much did you question your teacher on subject matter?
17. In general, how much did you like your high school teachers?
18. In high school, how much did you enjoy lecture classes?
19. In high school, how much did you enjoy discussion courses?

20. In high school, how much did you enjoy laboratory courses?
21. How much freedom or independence did your parents allow you in grade school (e.g., in the way you spent your time, in your choice of friends, etc.)?
22. How much freedom or independence did your parents allow you in high school (e.g., in the way you spent your time, spent your money, in your choice of friends, etc.)?
23. During high school, how much did you try to become like one of your parents?
24. During high school, how much did you try to become like a friend?
25. During high school, how much did you wish you could become more socially acceptable?
26. During high school, how much did you wish you could become more powerful?

FOR THE FOLLOWING BLACKEN:

A = great extent
B = large extent
C = moderate extent
D = slight extent
E = not at all

27. To what extent have you tried to be like your father?
28. To what extent has it been typical of you to daydream a good deal of the time?

29. In a group discussion, to what extent have you tended to try to make others see your point of view?

30. To what extent did you feel self-conscious during your high school years?

31. To what extent were your high school classmates bored by you?

The options for the following items are lettered (A, B, C, D, E) to correspond with the columns on your answer sheet. SIMPLY BLACKEN THE SPACE UNDER THE APPROPRIATE COLUMN.

32. How many summer have you attended a summer camp of some sort?

A. 0

B. 1

C. 2

D. 3

E. 4

33. Relative to your friends, how much time did you spend with your father during high school?

A. much more than my friends

B. more than my friends

C. about the same as my friends

D. less than my friends

E. much less than my friends

34. Compared to your friends, how much independence do you feel your parents allowed you while in high school?

A. much more than my friends

B. more than my friends

C. about the same as my friends

D. less than my friends

E. much less than my friends

35. While you were growing up, how much friction was there in your family among children?

A. very much

B. much

C. some

D. little

E. very little (or had no brothers and sisters)

36. In high school, when you were a member of a small group, how much did you participate?

A. much more than others in the group

B. more than others in the group

C. about the same as others in the group

D. somewhat less than others in the group

E. much less than others in the group

37. To what extent were you independent of others during high school?

    A. much more than my classmates

    B. more than my classmates

    C. about the same as my classmates

    D. less than my classmates

    E. much less than my classmates

38. How sensitive have you been to criticism?

    A. much more sensitive than most

    B. more sensitive than most

    C. about as sensitive as most

    D. less sensitive than most

    E. much less sensitive than most

39. In high school, how often did you expect to be successful in academic tasks?

    A. always

    B. very often

    C. often

    D. sometimes

    E. seldom

40. When you were growing up, about how many books were around the house?

A. a large library

B. several bookcases full

C. one bookcase full

D. one shelf full

E. very few or none

41. Before you came to college, how many magazines were subscribed to or bought regularly from newsstands, by your parents?

A. 0

B. 1 or 2

C. 3 or 4

D. 5 or 6

E. 7 or more

42. In high school, my parents were

A. very strict.

B. strict.

C. about average.

D. lenient.

E. very lenient.

43. What is the strength of your religious belief?

A. much stronger than that or most people my age

B. somewhat stronger than that of most people my age

C. about as strong as that of most people my age

D. somewhat weaker than that of most people my age

E. much weaker, or no religious belief

44. Religion in my home was considered as

A. the most important factor in our family life.

B. an integral part of our family life.

C. one of several important factors in our family life.

D. a somewhat unimportant factor in our family life.

E. a very unimportant factor in our family life.

45. What would you guess was your family's average, annual net income during your last two years of high school?

A. $0 - $6,999

B. $7,000 - 12,999

C. $13,000 - $16,999

D. $17,000 - $24,999

E. $25,000 or more

46. How much education did your father have?

A. did not complete high school

B. high school degree

C. some college, or business school training

D. graduated from college

E. graduate or professional degree

47. How much education did your mother have?

A. did not complete high school

B. high school degree

C. some college, or business school training

D. graduated from college

E. graduate or professional degree

48. How would you classify your father's occupation?

A. professional

B. managerial or semi-professional

C. retail business, sales, or rural owner

D. skilled trades or clerical

E. semi-skilled or unskilled labor

49. To approximately how many clubs, social and professional organizations did your mother belong?

A. 0

B. 1

C. 2

D. 3 or 4

E. 5 or more

50. To approximately how many clubs, social and professional organizations did your father belong?

A. 0

B. 1

C. 2

D. 3 or 4

E. 5 or more

51. With what social class do you associate your parents?

A. upper class

B. upper middle class

C. middle class

D. lower middle class

E. lower class

52. To what extent were the rules of conduct in your family home modified by "common sense" and the circumstances?

A. Rules were always applied sensibly and flexibly.

B. Rules were usually applied sensibly and flexibly.

C. Rules were occasionally applied sensibly and flexibly.

D. Rules were usually applied rigidly and inflexibly.

E. Rules were always applied rigidly and flexibly.

53. When you were growing up, how much attention did your father give you?

A. a great deal

B. much

C. some, or don't remember father

D. little

E. very little

54. How did your parents feel about your grades in high school?

A. always satisfied

B. usually satisfied

C. neither satisfied or dissatisfied

D. usually dissatisfied

E. almost always dissatisfied

55. How do you feel about the achievements of your parents?

A. superior to those of most parents

B. superior to those of many parents

C. equal to those of most parents

D. almost as good as those of most parents

E. not as good as those of most parents

56. How often did you argue or fight with your brotners or sisters during your grade school years?

A. very often

B. often

C. sometimes

D. seldom

E. never, or have no brothers or sisters

57. How much of a feeling of competition was there between you and your brothers and/or sisters?

A. very much

B. much

C. little

D. very little

E. none--or had not brothers and/or sisters

58. During high school, how many close females friends did you have?

A. none

B. 1

C. 2 or 3

D. 4 to 6

E. 7 or more

59. Compared to other people in your high school, how many casual friends did you have?

A. more than most

B. a few more than most

C. about the same number as most

D. a few less than most

E. a lot less than most

60. While in high school, how many of the following positions did you hold?

chairman of an important student committee

cheerleader

class officer

editor of a publication

leading actor in a play

member of the student council

member of the debating team

president of an honorary scholastic organization

speaker at the class commencement

captain of an athletic team

president of a student club

A. 0 to 2

B 3 or 4

C. 5 or 6

D. 7 or 8

E. 9 to 11

61. On the average, how many hours per week of homework did you do in high school?

    A. none

    B. 1 to 5

    C. 6 to 12

    D. 13 to 19

    E. 20 or above

62. How adequate do you feel your high school education was?

    A. very adequate

    B. adequate

    C. average

    D. somewhat inadequate

    E. very inadequate

63. During your high school years (grades 9-12) how many times did you make the semester honor roll?

    A. never

    B. once or twice

    C. three or four times

    D. five or six times

    E. seven or eight times

64. What was your approximate standing in your high school class?

A. below the average

B. about average

C. above average, but not in the upper 25%

D. in the upper 15%, but not in the upper 10%

E. in the upper 10%

65. During your youth when teams were being chosen for games, when were you usually picked?

A. I was usually one of those doing the choosing

B. near the first

C. around the middle

D. near the end

E. never played games

66. In the past, how effectively do you feel that you have met the demands of the social situations?

A. extremely effective

B. very effectively

C. moderately effectively

D. not very effectively

E. not at all effectively

67. How would you rate your past performance in physical activities?

A. excellent

B. very good

C. average

D. fair

E. poor

68. In high school, how close were you to your mother?

A. extremely close

B. quite close

C. moderately close

D. not very close

E. not close at all; or deceased for more than 10 years

69. In high school, how close were you to your father?

A. extremely close

B. quite close

C. moderately close

D. not very close

E. not close at all; or deceased for more than 10 years

70. In academic situations, how competitive were you in high school?

A. extremely competitive

B. very competitive

C. somewhat competitive

D. slightly competitive

E. not at all competitive

71. In high school, when friends came to you with their personal problems, how likely were you to go out of your way to give them help or advice?

A. much more likely than most people

B. somewhat more likely than most people

C. about as likely as others

D. somewhat less likely than most people

E. a good bit less likely than most people

72. Which one of the following do you think is closes to describing your personality?

A. difficult to really get to know

B. have a few really close friends and a number of acquaintances

C. find it extremely difficult to describe myself

D. friendly and easy-going; have a lot of friends

E. very jolly; the "life-of-the-party" type

73. During high school, or before, did you every conduct a scientific experiment on your own initiative (not as part of any required school assignment)?

A. yes--both before and in high school

B. yes--before high school

C. yes--in high school

D. no

74. Did you ever build an apparatus or device of your own design on <u>your own initiative</u> and not as part of any required school assignment?

A. yes--both before and in high school

B. yes--before high school

C. yes--in high school

D. no

75. How often did your high school teachers stress the importance of students thinking for themselves and applying the knowledge they acquired?

A. almost always

B. very often

C. often

D. sometimes

E. seldom

76. Relative to others in your high school, how popular were you?

A. much more popular than others

B. more popular than others

C. about as popular as others

D. slightly less popular than others

E. less popular than others

77. Relative to your close friends, how well did you do in physical or athletic activities?

A. much better than they did

B. somewhat better than they did

C. about as well as they did

D. not quite as well as they did

E. not nearly as well as they did

78. On the average, how often did you go to church during high school?

A. much more often than others my age

B. more often than others my age

C. about as often as others my age

D. a little less often than others my age

E. a lot less often than others my age

79. On the average, how many times per month did you go on dates during high school?

A. not at all

B. once per month

C. 2 to 4 times

D. 5 to 7 times

E. 8 or more times

80. How many younger brothers or sisters do you have?

A. 0

B. 1

C. 2

D. 3

E. 4 or more

81. On the average, how many times per month did you go to parties in high school?

A. not at all

B. once per month

C. twice per month

D. three times per month

E. four or more times per month

82. How much younger than you is your nearest younger brother or sister?

A. less than 2 years

B. 2 to 3 years

C. 3 to 6 years

D. 6 or more years

E. have no younger brothers or sisters

83. When you were in high school, how often did your parents punish you by taking away privileges?

A. very often

B. often

C. sometimes

D. seldom

E. never

84. How successful were your teachers in arousing your academic interests?

A. extremely successful

B. very successful

C. moderately successful

D. somewhat successful

85. Compared with other students in your high school, how much did you try to achieve to the limits of your abilities?

A. much more than other students

B. more than other students

C. about the same as other students

D. less than other students

E. much less than other students

86. In high school, how often did your mother provide you with emotional support and show interest in you as a person?

A. much more often than other mothers seemed to be

B. more often than other mothers seemed to

C. about as often as other mothers seemed to

D. less often than other mothers seemed to

E. much less often than other mothers seemed to

87. About how much of your college education have you planned to finance from academic scholarships?

A. all of it

B. three-quarters of it

C. half of it

D. one-quarter of it

E. none of it

88. How likely were your parents to give you affection, praise, and attention when you had done something well?

A. much more than most parents

B. more than most parents

C. about as much as most parents

D. somewhat less than most parents

E. less than most parents

89. How well do you think you did in physical sciences relative to other students with about the same ability at your high school?

A. much better

B. somewhat better

C. about the same; didn't take subject; don't know

D. a little less well

E. much less well

90. How well do you think you did in biological sciences relative to other students with about the same ability at your high school?

A. much better

B. somewhat better

C. about the same; didn't take subject; don't know

D. a little less well

E. much less well

91. How difficult were physical science subjects for you?

A. extremely difficult

B. rather difficult

C. moderately difficult

D. reasonably easy

E. very easy

92. How difficult were biological science subjects for you?

A. extremely difficult

B. rather difficult

C. moderately difficult

D. reasonably easy

E. very easy

93. How old were you when you started dating regularly?

A. never have done this

B. older than 17 years

C. 15 to 17 years old

D. 13 to 15 years old

E. younger than 13

94. During high school, how much did you say what you felt?

A. very much

B. much

C. some

D. little

E. very little

FOR THE FOLLOWING BLACKEN:

A = very much

B = much

C = some

D = little

E = very little

In high school, how much did you enjoy courses in each of the following areas?

95. Sciences

96. History

97. Physical Education

FOR THE FOLLOWING BLACKEN:

A = very often

B = often

C = sometimes

D = seldom

E = never

How often have you done or engaged in each of the following in the past four years?

98. Building cabinets, furniture, models, metal products, etc.

99. Repairing electrical or mechanical devices or machines

100. Individual sports--golf, tennis, hunting, etc.

101. Team sports--football, baseball, basketball, etc.

102. Working with scientific equipment or apparatus

During high school, how often did you watch each of the following types of television programs?

103. Operas, symphonies, concerts, or educational features

104. Sports events

When you were a child, how often did your father do each of the following?

105. Nag or push you for better achievements

For the items which follow, the options are lettered (A, B, C, D, E) to correspond with the columns on your answer sheet. SIMPLY BLACKEN THE SPACE UNDER THE APPROPRIATE COLUMN.

What was your average grade in each of the following areas high school?

106. Physical sciences	A. about "A"
107. Biological sciences	B. about "A-" to "B+"
108. English	C. about "B" or "B-"
109. History, Economics, Government	D. about "C+" or "C"
	E. "C-" or less

How active have you been in any one or more of the following organizations or activities?

110. School newspaper, magazine, or annual
111. School subject matter clubs, such as science, mathematics, etc.
112. Hobby clubs, photography, hot rod, crafts
113. Church, religious or charitable
114. Political clubs or student council
115. Athletics

A. extremely active
B. very active
C. somewhat active
D. slightly active
E. inactive or not a member

How often do you read the following magazines?

116. Fortune or Business Magazine
117. Harpers Atlantic, or other literary magazines
118. Sports and outdoor magazines

A. regularly
B. quite often
C. occasionally
D. very rarely
E. never

APPENDIX L.

THE PDI EMPLOYMENT INVENTORY

ITEM EXAMPLES

EXAMPLES OF EMPLOYMENT INVENTORY ITEMS[1]

Performance Scale

Taking orders is a part of every job.

You love to take chances.

You have never been fired from a job.

Tenure Scale

At this time in your life, a job is a job, not a career.

Your social life makes it hard for you to work evenings or weekends.

You would not quit a job unless you had another one lined up.

Franknes Scale

You have absolutely no fear of speaking in front of a large group.

Once in a while, you feel a little lazy.

You have sometimes been jealous of other people.

Infrequency Scale

You have never used a telephone or watched TV.

Eating properly can be important for your health.

You cannot count past 50.

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[1]Employment Inventory details may be obtained from: George Paajanen, Ph.D., Personnel Decisions, Inc., 2000 Plaza VII Tower, 45 S. 7th St., Minneapolis, MN 55402-1608.

APPENDIX M.

THE PROBSCOR QUESTIONNAIRE

PROBABILITY ESTIMATES OF RISK AND APPREHENSION

For each question, circle one answer:

1. What do you estimate is the percent of people who commit white collar crimes for personal financial gain and who are caught?

   a. 0% b. 20% c. 40% d. 60% e. 80% f. 100%

2. What do you estimate is the percent of people who commit white collar crimes for personal financial gain and are convicted?

   a. 0% b. 20% c. 40% d. 60% e. 80% f. 100%

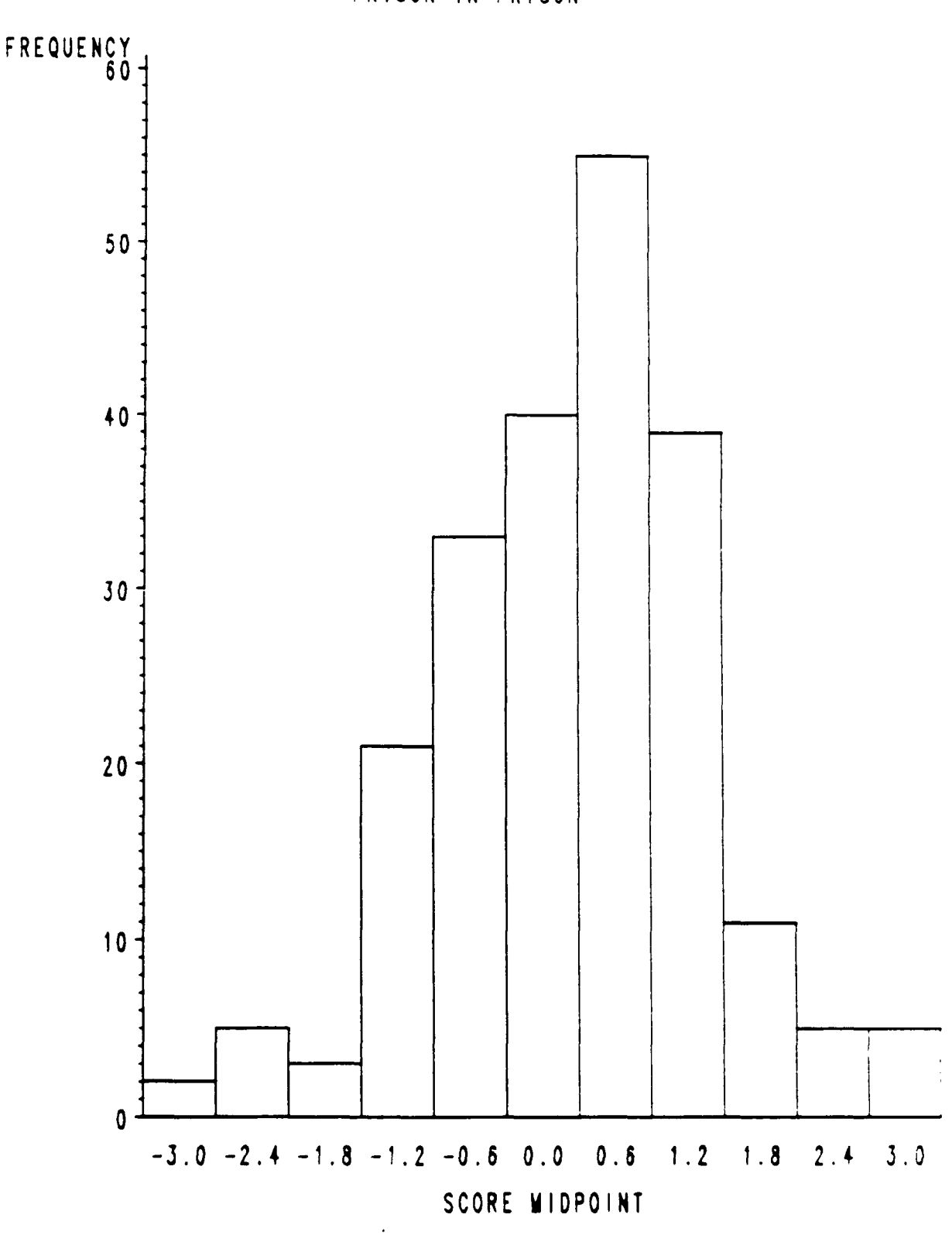
3. What do you estimate is the percent of people who commit white collar crimes for personal financial gain and are punished?

   a. 0% b. 20% c. 40% d. 60% e. 80% f. 100%

APPENDIX N.

FREQUENCY DISTRIBUTION FOR DISCRIMINANT SCORES FOR PRISON SAMPLE

Discriminant Score



APPENDIX O.

FREQUENCY DISTRIBUTION FOR DISCRIMINANT SCORES FOR WORKPLACE SAMPLE

Discriminant Score